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Exploring a participatory gender equality intervention in science

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MONIC LANSU

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Doctoral Thesis

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"Biology is not necessarily destiny"

Virginia Valian (1998, p. 67). *Why so slow? The advancement of women.*

Content

Chapter 1

Introduction

> "That the organizational landscape continues to be marked by persistent patterns of gender inequality is not in dispute. Documentation on the enduring sex segregation of organizations and occupations, on the stubborn fact of pay disparities between women and men, on the continued devaluation of women's work, and on women's absence at higher levels of organizations, is voluminous. Yet, we question, can the scholarly literature do more than document such facts?" (Calás, Smircich & Holvino, 2014:18).

This thesis pertains to the question in the above quote: can scholarly literature do more than document gender inequality in organizations? I think that it should at least try, by designing, implementing and evaluating gender equality interventions which aim to change the persistent patterns of gender inequality in organizations. By exploring gender equality interventions in academia with a lens of their contribution to processes of generating, negotiating and acting upon gender knowledge, I hope to contribute to scholarly and practical insights on these interventions. In this introductory chapter, I first introduce gender equality interventions aiming for transformational change, explaining how exactly these interventions can hope to impact upon the 'persistent patterns of gender inequality' which Calás, Smircich, and Holvino (2014) refer to. Next, I discuss three goals of gender equality interventions that my literature research brings me to contend are essential to enable transformational change: addressing knowledge of gender inequality processes, addressing power relations underlying gender knowledge, and addressing the meanings managers attach to their role in gender inequality. These goals lead to as yet unanswered questions regarding gender knowledge generation, regarding negotiations on gender knowledge, and regarding action implications of gender knowledge. I explain how these research gaps inform my central research question. Subsequently, I explain my choice of a natural science faculty as the context of my research. I conclude this first chapter with an overview of the structure of this thesis, presenting the research questions that the empirical chapters of my thesis address.

Gender equality interventions

This thesis is about gender equality interventions targeting persistent patterns of gender inequality, thus aiming for transformational change. In the following section I will explain what I mean with gender equality interventions aiming for transformational change and explain my choice of a particular intervention strategy. To start with, I

sketch the position of these interventions in the field of gender inequality.

Gender equality interventions can be distinguished on two dimensions regarding their strategy for change: Focusing either on individuals or structures, and aiming at either inclusion, re-evaluation or transformation (Benschop & Van den Brink, 2014; Benschop & Verloo, 2011). Many gender equality interventions focus on changing individuals rather than structures. Focusing on individuals restricts the aim of the intervention to either inclusion of women or re-evaluation of the specific contribution women are deemed to make. An example of an intervention strategy aiming for individual inclusion is famously known as fixing the women, aspiring to help women to survive and thrive in a men's world (Ely & Meyerson, 2000b). This strategy targets inclusion of women by focusing on capacity building of women, offering them for instance mentoring and trainings in negotiation and networking skills. Another intervention strategy aimed at individual inclusion, known as removing barriers (Ely & Meyerson, 2000b), or creating equal opportunity (Benschop & Van den Brink, 2014), targets inclusion of women by removing obstacles that hinder women more than men, such as combining work and (family) life and evaluation bias. Intervention strategies aiming for re-evaluation try to manage diversity or to value the differences between men and women (Benschop & Van den Brink, 2014). This latter intervention strategy, also known as celebrating differences (Ely & Meyerson, 2000b), adheres to the belief that women bring specific skills and attitudes. Interventions using this strategy "celebrate gender differences, seeing them as a resource for organizations and society" (Benschop & Verloo, 2011).

Gender equality interventions focusing on structures aim either at inclusion, or at transformation. The former strategy involves the creation of equality of outcomes, for instance by applying quota; the latter strategy aims for transformational change and involves both gender mainstreaming and post-equity (Benschop & Van den Brink, 2014). Post-equity targets a "radical restructuring of organizations", identifying and changing subtle organizational processes that appear to be gender neutral, but "implicitly or explicitly place a higher value on the prototypical male, masculine

identity, or masculine experience" (Ely and Meyerson (2000b, pp. 132-133).

In order to explain my choice of intervention strategy, in the next paragraph I first clarify how crucial concepts – gender and power, gender inequality as a system, and transformational change – inform my understanding of gender inequality. I use these concepts to discuss scholarly evaluations of different intervention strategies for gender equality change. I conclude that interventions aiming at transformational change appear to have the best cards to address gender inequality. Finally, I explain my choice of participatory system dynamics as the intervention to be employed in this dissertation research.

Gender and power

My understanding of gender inequality is informed by critical and social constructionist literature on gender in organizations, which considers gender a 'constitutive element of social relationships' (J. Scott, 1986, p. 1067). People 'do' gender (West & Zimmerman, 1987, p. 126). In this view, gender is not an attribute or a characteristic of a person, but rather an 'emergent feature' (Poggio, 2006, p. 226), that is constructed in acting and interacting with other persons in social situations. Expectations and implicit prescriptions about how femininity and masculinity are to be performed constantly interact with how people actually do gender (Broadbridge & Simpson, 2011). There is nothing definite or solid about gender: the specific construction of masculinity and femininity may change over time, location, and context (Bleijenbergh, Van Engen, & Vinkenburg, 2013), as well as in intersection with other differences (Bagilhole, 2010; Fearfull & Kamenou, 2010; Holvino, 2008). However, the social construction of gender always expresses hierarchical relations between masculinity and femininity. Thus, in doing gender, gendered hierarchies are continuously reproduced and reinvented: "Seen from this perspective, gendered differences are sutured into the dynamic and underlying assumptions and practices that constitute organizations, not concentrated into discrete blocks and barriers" (Garforth & Kerr, 2009, p. 390). An example is the process of 'othering women', in which men seem to be better suited

to fulfil the role of ideal worker, even when job characteristics are contradictory (Bleijenbergh et al., 2013), or when job characteristics have changed over time and incorporate formerly feminine requirements (Peterson, 2007). In short, the specific gender constructions may be fluid, and change over time; the hierarchical ordering does not. It is this ongoing production of gendered hierarchies, which never raises the question of male privilege, that has to be tackled to impact on transformational change (Acker, 1990; Broadbridge & Simpson, 2011; Garforth & Kerr, 2009; Hardy & Clegg, 2004; Parpart, 2014).

In order to understand why these gendered hierarchies produce and reproduce themselves, a clear conception of power is key. Traditionally, power is seen as something people have, as something granted to them on the basis of hierarchical position, expert status, esteem, or other power bases (French, Raven, & Cartwright, 1959). This conception of power is intrinsically hierarchical, usually labelled legitimate, and inevitably following the formal design of organizations, in which some people wield power over other people in order to further their own interests (Hardy & Clegg, 2004). It was Foucault who radically changed this single idea of power as a strategic act of individuals or groups of people, impacting upon the rewards of other individuals or groups: "Power is employed and exercised through a net-like organization [in which] individuals are always in the position of simultaneously undergoing and exercising this power" (Foucault, 1980, p. 98). The author describes power as embedded in the fibre and fabric of everyday life, never following a grand plan, simply constituting the existing patterns of dominance. Power is thus not something one can have, give away, or appropriate. In this conceptualization, power is not an individual characteristic, much the same as gender is not, but concerns socially constructed relations between actors, operating within an existing web of power relations (Hardy & Clegg, 2004, p. 763). These power relations are maintained and reproduced via discourse (Mumby & Stohl, 1991, p. 313), defining a natural rule, a norm (Foucault, 1980, p. 106), thus privileging what is considered normal, and marginalizing what is not (Hardy & Clegg, 2004). Morley (2006, pp. 543-544), for instance, describes how

male networks "promote and maintain male interests in a myriad of ways, including selection and promotion", but are unmarked and unacknowledged: "the way male colleagues intimately relate to each other […] is crucial to their success at gaining and retaining power at work". Insights in how these networks privilege men in almost imperceptible ways are plenty (Fisher & Kinsey, 2014; Kantola, 2008; Van den Brink & Benschop, 2012b). This conception of power entails that certain knowledges are privileged above other knowledges, which lack the approval of the established regimes of thought (Foucault, 1980, p. 81). In other words: "knowledge and power are intrinsically related, [implying that] knowledge is not an innocent or neutral tool […]. Knowledge creates rather than reveals truths" (Alvesson & Kärreman, 2001, pp. 999-1000).

Thus, power relations are part of a constructed social reality that is perceived as the normal status quo. The dominant processes in this 'normal' status quo (re) create hierarchical gender relations. They prevail over alternative processes if only because it is difficult to see what is wrong with normalcy, let alone change it. Gender is thus an important axis of power (Ely & Meyerson, 2000b; Meyerson & Kolb, 2000), and gender inequality an outcome of gendered processes, ranking people in a socially constructed hierarchy of power and privilege. To have any chance at improving gender equality, gender equality interventions should target these roots of the problem: gender and power processes (re)creating gender inequality.

Evaluation of intervention strategies for gender equality change

Departing from the view that gender equality interventions should address power structures underlying gender inequality, gender equality interventions focusing on individual women are unequivocally dismissed as not likely to substantially decrease gender inequality (Ely & Meyerson, 2000b). For instance, even though capacity building can help individual women, it leaves the underlying (masculine) norms and values of how to behave and to be successful intact. Women have to adapt to succeed, while evaluation bias deprecates their actions and achievements (Foschi, 2009; Rees,

2011; van den Besselaar & Sandström, 2017; Van den Brink & Benschop, 2012a). Interventions which revalue 'feminine qualities' do not require women to adapt, but they tend to fix men and women in different kinds of identities, motivations, behaviours et cetera: reifying gender differences, leaving no space for any behaviour or identity outside of the dichotomy. In addition, even when organizations, in theory, profess they value feminine qualities, in practice these qualities are rather nice-to-haves than need-to-haves (Madera, Hebl, & Martin, 2009).

Interventions which aim to remove obstacles that hinder women more than men, such as combining work and (family) life and evaluation bias have certainly improved working life for (white, middle class) women and some men. Critiques of this strategy centre around the fact that it accommodates existing systems of inequality, and thus does not "fundamentally challenge the sources of power or the social interactions that reinforce and maintain the status quo" (Ely & Meyerson, 2000b, p. 112). Removing obstacles addresses the symptoms and does not change the system. In addition, removing obstacles is a strategy which pays no heed to the interaction of inequality processes at different levels of individual, organization and society (Acker, 1990, 1992, 2006b). Therefore, their impact will be limited, as "multi-level mechanisms will continually elude our grasp" (Ridgeway, 2014, p. 2). Calás et al. (2014) claim that the ubiquitousness of literatures advocating interventions within this strategy, is in itself proof of their failure to bring about change. These interventions are even said to feed gender blindness or denial, sustain the myth of personal choice, and support meritocracy, reinforcing a masculine, single-focused approach to career success (Connell, Fawcett, & Meagher, 2009; Hughes, Schilt, Gorman, & Bratter, 2017; Knights & Richards, 2003; Lewis, 2014).

We saw that gender equality interventions aiming to change structures focus either on inclusion of women or on transformation (Benschop & Van den Brink, 2014). The inclusion strategy aims for equality of outcomes, using instruments such as preferential treatment or quota. This strategy does address power structures by acknowledging systematic discrimination of minority groups, and by questioning

the neutrality of norms and values underlying meritocratic beliefs. However, exactly because of its heads-on character, this strategy is contested and evokes substantial resistance. Nevertheless, Benschop and Van den Brink (2014) suggest that it may be very useful because of this resistance, opening up a debate on norms and values. Employing this strategy, however, was beyond the scope of my research.

This brings me to gender equality interventions targeting transformational change. Though transformational change is a buzz-word in gender equality change literature, an actual definition is hard to find. It is clear, however, that transformational change impacts upon underlying power structures, which privilege certain knowledges over other knowledges, and which determine access to resources and the distribution of rewards (Acker, 2006b). Interventions aiming for transformational change address gender inequality as systemic, seeing gender inequality as (re)created and sustained by interacting processes, policies and practices (Acker, 2006b; Bird, 2011; Calás et al., 2014; Connell, 2005; De Vries, 2015). System processes producing gender inequality are ubiquitous, simultaneous, and mutually constitutive, and they occur at multiple levels; societal, organizational, individual (Acker, 1990, 1992). This implies that gender inequality can only be understood in the interaction of underlying processes, as these interacting processes constitute the system, and explain why gender inequality is so persistent. In gender equality change literature, the systemic character of gender inequality is often implicit, for instance when scholars claim that gender equality interventions should be about 'changing the rules of the game' (Mitchneck, Smith, & Latimer, 2016), 'rethinking how the organization is structured and managed' (Sorensen Ole, Hasle, & Pejtersen, 2011), or 'transforming organizational structures and cultures' (Vinkenburg, 2017). Other scholars more explicitly refer to gender inequality as a system. Acker (2006b, p. 443), for instance, describes gender inequality as "systemic disparities between participants in power and control over goals, resources and outcomes; workplace decisions […]; opportunities for promotion and interesting work; security in employment and benefits; pay and other monetary rewards; respect; and pleasures in work and work relations." Ridgeway (2014, p. 2)

argues that inequality processes at multiple levels should be examined to discover how they interact to create and sustain patterns of inequality. "In my view, the most important mechanisms, the ones that have the most obdurate power to sustain broad patterns of inequality, often emerge from the systematic interaction of processes at multiple levels". In this dissertation I will build upon system dynamics theory to deepen the understanding of gender inequality as systemic, because "[…] if we are to create transformational change as opposed to just change we have to change the system dynamics, and to change the system dynamics we have to be able to see them" (Burns, 2015, p. 444).

Transformational change addresses the processes underlying gender inequality. Because of this focus on the systemic processes of gender inequality, interventions aiming for transformational change are deemed to have the best cards in increasing gender equality (Benschop & Verloo, 2011; Ely & Meyerson, 2000b; Vinkenburg, 2017). In the next paragraph I will distil from gender equality change literature three important characteristics of gender equality interventions targeting transformational change.

Transforming the system

The most important characteristic of interventions aiming for transformational change is that they identify gender as an axis of power, and gender inequality as an outcome of gendered processes, ranking people in a socially constructed hierarchy of power and privilege. These interventions challenge "gender as a structure" (Benschop, Mills, Mills, & Tienari, 2012, p. 283), changing "the asymmetric gender order" (Husu, 2013, p. 18), addressing relations and structures of power and privilege (Morley, 2006), and contesting prevalent norms, values, and power relations (Benschop & Verloo, 2006; Ely & Meyerson, 2000b). In short, interventions aiming to transform the system processes (re)creating gender inequality will need to explicitly address power (Benschop & Van den Brink, 2014; Bradshaw & Boonstra, 2004; Calás et al., 2014; De Vries, 2015; Eerdewijk & Davids, 2014; Ely & Meyerson, 2000b; Putnam,

Fairhurst, & Banghart, 2016).

The second characteristic of interventions aiming for transformational change is their participatory nature, generating knowledge, involving and empowering the people it concerns, improving the quality of discussions and policy outcomes (Krizsan & Lombardo, 2013; Lines, 2004; Mitchneck et al., 2016). For instance, the post-equity interventions that Ely and Meyerson (2000b) propose, aim to transform organizations through reflection and learning of participants. They cite Coleman and Rippin (2000) to argue for a participatory, collaborative approach, and relate how participatory action research literatures inspired the development of their approach. The active engagement of participants increases awareness of gender inequality processes, and increases the engagement of participants to examine their own contribution in increasing or decreasing the gendered structural constraints and biases they have identified (Bird, 2011, p. 212).

The third characteristic of interventions aiming for transformational change concerns the strategizing of incremental change, thus hoping to tone down resistance. Emergent, localized processes of incremental change (Meyerson & Kolb, 2000), managed by tempered radicals (Meyerson & Scully, 1995; Meyerson & Tompkins, 2007) are thought to keep resistance at bay and to gradually transform organizations. An incremental change strategy also implies that the intervention is embedded in broader programs that have the support of higher level administrators (Bird, 2011). However, the fact that they need to work within the power structures they aim to change is also a challenge (Acker, 2000). Internal professional change agents, such as diversity officers, are in danger of co-optation and de-radicalization (Swan & Fox, 2010). External change agents might have to tone down on 'scary radicalism' (Benschop & Verloo, 2011) in order to ensure entrance to and cooperation from the organization.

Gender equality change literature offers descriptions of several interventions that were employed to help transform the system. Instances are the so-called case study approach (Bird, 2011) and the work conference method (Heiskanen, 2015).

Both interventions conform to the three characteristics of interventions aiming for transformational change: addressing inequality structures, using participatory methods, and strategizing incremental change. In the next paragraph, I zoom in on a third intervention, which is the intervention of my choice because I think it promises to excel in all three characteristics.

Participatory system dynamics

Participatory system dynamics, also known as participatory modelling (Bleijenbergh, Benschop, & Vennix, 2013; Bleijenbergh & Van Engen, 2015), is my choice of intervention strategy, aiming at transformational change towards gender equality. Participatory modelling is mainly applied to support strategic decision-making in organizations, and "especially suited to tackling messy problems, defined as problems in which people hold entirely different views on whether there is a problem, and if they agree; and what the problem is" (Bleijenbergh & Van Engen, 2015, p. 424). The reasons to involve organization members in modelling a problem are threefold. First of all, it taps into the various knowledges of all participants. In addition, it offers opportunities to integrate these knowledges, and thus foster consensus on the causes and consequences of the problem at hand. Finally, it creates commitment with decisions resulting from the analysis. Bleijenbergh and colleagues (Bleijenbergh et al., 2013; Bleijenbergh & Van Engen, 2015) were the first to use participatory system dynamics as a gender equality intervention, aiming to support participants in "reaching a shared problem definition and analysis of gender inequality", as well as "identifying and implementing policies to tackle gender inequality" (Bleijenbergh & Van Engen, 2015, p. 422) They argue that participatory modelling "involves individuals in understanding structural processes and so potentially supports transformational change" (Bleijenbergh & Van Engen, 2015, p. 434). Thus, the intervention hopes to atone the opposing goals of interventions addressing individuals or addressing organizational structures, as we saw in the discussion of different gender equality intervention strategies (Benschop & Verloo, 2006; Ely & Meyerson, 2000b). They

describe an intervention in a Dutch general university. The authors specifically involved deans and managers, based on the rationale that their commitment is key to the success of gender equality interventions, as they are accountable for gender policy targets. The authors found that their intervention increased organizational responsibility for reaching these targets. Weaknesses of the intervention, according to Bleijenbergh and Van Engen (2015), are its relatively large time investment, and the possibility that understanding and commitment may be limited to the participants. However, these limitations hold for all gender equality interventions involving participants.

I think participatory system dynamics promises to perform well on the three characteristics of interventions aiming for transformational change: addressing inequality processes, using participatory methods, and strategizing incremental gender equality change. To begin with, participatory system dynamics is specifically designed to find the structure of problems, meaning that gender inequality is approached as the result of interacting processes. I will expand on this characteristic of participatory system dynamics in the next paragraph. Secondly, participatory system dynamics is designed to tap into the knowledges of participants in different positions of influence and power, to create consensus on the analysis and commitment on the decisions following the analysis (Rouwette, 2011). Finally, as participatory system dynamics includes drawing a causal map visualizing the structure of the problem, as well as describing the analysis in a written report, this increases the chance that the intervention leads to gender equality change: "[W]hen this knowledge has become part of the 'organizational discourse' [it will] be reproduced and so be able to transform the organization structurally" (Bleijenbergh & Van Engen, 2015, p. 435).

This dissertation researches a series of interventions that closely follow the above described participatory system dynamics. In the next chapter, on Methodology, I return to this intervention to expand upon the origins and onto/epistemology of this intervention. Now, I continue my introductory chapter with a discussion of the processes that in my opinion are key to transformational change. This discussion will inform the formulation of my research question.

Transformational change requirements

Research on gender equality interventions shows that progress is slow, context-dependent, difficult, and everything but straightforward, and that questions on how this transformational change is to be achieved, are at best partially answered (Benschop et al., 2012; Dobbin & Kalev, 2016; Moss-Racusin et al., 2014; Parsons & Priola, 2013).

Based on my reading of gender equality change literature, I propose that three processes are key in interventions aiming at transformational change: the generation of gender knowledge; negotiations on gender knowledge; and acting upon gender knowledge. In the next paragraphs I describe why these processes are key and what needs to be researched about these processes. By exploring, both conceptually and empirically, how participatory system dynamics supports these three key processes of generating, negotiating and acting upon gender knowledge, this dissertation contributes to the scholarly understanding of the transformational change capacity of gender equality interventions.

Generating gender knowledge

Gender knowledge is a central concept in transformational change efforts. Most often, this concept refers to expert gender knowledge: a structural understanding of "gender hierarchies that systematically affect women and are reproduced through existing social structures" (Krizsan & Lombardo, 2013, p. 83). Scholars argue that it is important that organization members know how gender inequality results from gender inequality processes and practices (Benschop, Holgersson, Van den Brink, & Wahl, 2015; Benschop & Van den Brink, 2014; Bird, 2011; Bustelo, Ferguson, & Forest, 2016; Ely & Meyerson, 2000b). The argument is that, once organization members recognize how organizational practices produce gender inequality, "these practices become potential targets for experimentation and change" (Meyerson & Kolb, 2000, p. 564). Thus, change efforts hinge on knowledge that recognizes

gendered processes and organizational practices, and acknowledges their role in (re) creating gender inequality. Gender equality interventions need to perform "knowledge work" in order to achieve structural change: they should create awareness with stakeholders, help them see how gender inequality is systemic, and thus enable them to devise new policies and practices that do not reproduce inequalities (Ferree & Verloo, 2016). Thus, generation of gender knowledge appears to be the foundation of any transformation: involving participants (Bird, 2011; Bleijenbergh & Van Engen, 2015; Heiskanen, Otonkorpi-Lehtoranta, Leinonen, & Ylöstalo, 2015), having them understand that gender inequality is systemic (Acker, 2006b; Bustelo et al., 2016; De Vries, 2015), and that the primary locus of analysis is processes in the organization (Bird, 2011; Britton & Logan, 2008; Calás et al., 2014). However, a focused view on what the key characteristics of this knowledge are, or how to explore this gender knowledge of participants to gender equality interventions, is as yet missing. This dissertation will coin the concept of systemic gender knowledge, provide insights in the key characteristics of this systemic gender knowledge, devise a visualization of this knowledge, and use this visualization to explore how a gender equality intervention impacts upon this knowledge.

Negotiating gender knowledge

Scholars argue that power dynamics play an important role in gender knowledge generation (Ferree & Verloo, 2016). Cavaghan (2013, 2017b), for instance, shows how expert gender knowledge competes with dominant gender knowledge, which most often does not support transformational change. Other scholars report how expert gender knowledge is disregarded or disreputed (Bleijenbergh, 2018; Moss-Racusin, Molenda, & Cramer, 2015; Van den Brink, 2015). Thus, knowledge generation is a political and contested process, with participants to gender equality interventions refusing to accept the validity of the knowledge on offer (Bird, 2011; Cavaghan, 2017a; Ferguson, 2015; Goltz & Sotirin, 2014; Heiskanen et al., 2015; Lombardo & Mergaert, 2013; Mergaert & Lombardo, 2014; Van den

Brink, 2015). As stakeholders in positions of power "continue to embrace women-centered explanations for gender disparities" (Bird, 2011, p. 202), power tends to preserve hegemonic gender knowledge: dominant, non-systemic, gender knowledge (Cavaghan, 2013; Heiskanen et al., 2015).

All in all, resistance to gender knowledge generation is commonly reported in gender equality change literature as hindering change. However, new views on resistance have emerged in the last twenty years (Courpasson, Dany, & Clegg, 2012; Ford & Ford, 2010; Ford, Ford, & D'Amelio, 2008; Lombardo & Mergaert, 2016; Pina e Cunha, Clegg, Rego, & Story, 2013; Thomas & Hardy, 2011). Especially organizational becoming literature offers a view on resistance that might be productive of change (Tsoukas, 2009; Tsoukas & Chia, 2002; Van de Ven & Poole, 2005). This literature sees organizational change as a continuous and interactive discursive process, in which (groups of) organization members engage in negotiations, constructing 'new meanings and interpretations of organizational activities' (Tsoukas, 2005, p. 98). Resistance to change, in this view, is a form of negotiation on how to understand and to practice change (Spee & Jarzabkowski, 2017), "challenging and rewriting [...] organizational discourse" (Thomas & Davies, 2005a, p. 701). Thus, resistance lies at the heart of change (Thomas & Hardy, 2011). So, what about resistance to gender equality interventions, what role does resistance play there? In general, resistance to gender equality interventions is deemed unavoidable (Acker, 2000). Benschop and Van den Brink (2014, p. 17) argue that "[…] it is not possible to change routines and their underlying values silently without conflict and resistance". If the debate about underlying values can be seen as a negotiation on gender equality practices, challenging existing power relations, such a debate can create openings for change (Van den Brink & Benschop, 2017). "The very process of posing dilemmas and opening them up for deliberation promotes gender policy transformations that can push towards better quality" (Krizsan & Lombardo, 2013, p. 88), referring to the quality of policy formulation and implementation. It follows that enabling negotiations on new meanings and new practices regarding gender

between organization members with different positions in hierarchy, different views, norms and values, is crucial to effective gender equality interventions.

Summing up, we know that participants to gender equality interventions seldom accept new gender knowledge at face value, because hegemonic gender knowledge is so intimately connected to existing power relations. According to the take on change of organizational becoming literature, resistance to new gender knowledge can contribute to change. Possibly, when resistance is tunnelled towards negotiations, new meanings can emerge, contributing to organizational change as a continuous process. However, detailed insights in how negotiations as a site/an expression of power dynamics work in gender knowledge generation are scarce (Bustelo et al., 2016). In this thesis I provide such insights by embarking on a micro-exploration of negotiations as an expression of power dynamics in gender knowledge generation.

Acting on gender knowledge

Knowledge of gender inequality processes is a necessary, but, in itself, insufficient condition for organizational change: between theory and action a large gap lurks (Cavaghan, 2017a; Morley, 2006). Even when gender equality policies are published in reports, and thus achieve some sort of first-order reality (Ford & Ford, 1995), the effect they have on day-to-day work or on the micro-politics of institutional power is limited (Garforth & Kerr, 2009).

There is a role for managers here, according to various scholars. Essentially and ideally, managers should lead the change (McRoy & Gibbs, 2009, p. 697), in words as well as in action: it is specifically middle managers who are expected to "walk the talk" (Mattis, 2001, p. 385). This engagement of middle managers, leading the change and making it happen, is referred to as ownership (Kelan & Wratil, 2017; Mattis, 2001; McRoy & Gibbs, 2009). A similar concept is "*agency of intention*, where people seek change" (Parpart, 2014, p. 392). A crucial element in the step from theory to action, therefore, is the view participants have on their roles towards gender equality change. Especially problem ownership of middle managers appears to be

a pivotal concept in effective change efforts. However, we do not know what this ownership entails, nor how negotiations impact upon the meanings middle managers attach to this ownership, or to their role in the change process. This thesis explores the hitherto underspecified concept of (problem) ownership of middle managers, and researches by means of micro-explorations how middle managers negotiate their problem ownership.

Central research question

The previous paragraph has discussed three central and interconnected processes regarding the transformational change capacity of gender equality interventions. I have shown that these processes raise as yet unanswered questions. They are the research gaps which this dissertation will address, in order to increase insights in the transformational change capacity of gender equality interventions, by answering the following research question:

What is the transformational change capacity of participatory system dynamics as a gender equality intervention in science?

I have adopted the research strategy of participatory action research to address this research question. In the next chapter, I expand upon participatory action research as a methodology, applied in the field of participatory system dynamics using the method of group model building. I also address data collection and data analysis, and I reflect upon my position as a researcher in a participatory action research project.

The participatory action research concerned a series of gender equality interventions in five research institutes of a science faculty in the Netherlands (2014-2016). These interventions were designed according to participatory system dynamics, entailing that a group of organization members with different positions

in organizational hierarchy are facilitated to negotiate their views on causes and consequences of gender inequality in their organization, resulting in a shared analysis of gender inequality processes. In the next section of this introductory chapter, I expand on the research context.

Research context

In order to answer my research question, I engaged in a participatory action research in the science faculty of a Dutch university[1], aiming to address gender inequality in this faculty. Women continue to be underrepresented in academia. In 2012, on average in EU-28, 33% of researchers were women (EC, 2016, p. 63). The Netherlands took up the second-to-last position with 24.1% of women researchers. Though in the European Union, in the period 2005-2011, the growth rate of women researchers (4.8%) exceeded the growth rate of men researchers (3.3%), this hardly contributed to overall gender balance. Due to the low numbers of women researchers, substantially larger growth differences are needed to contribute to gender balance (Bleijenbergh, Vennix, Jacobs, & van Engen, 2016).

This 33% of women researchers in the European Union is averaged over all faculty positions in academia. However, one of the most salient characteristics of academia is its vertical segregation: women seem to just disappear at every step of the career path, from student to full professor. This is especially the case in the Netherlands, where decades of relatively balanced numbers in men and women students fail to translate in similarly balanced numbers in full professors. In fact, in 2013, the Netherlands scored 24st place in the European ranking of female full professors with a meagre 17.1%. Only Lithuania, Czech Republic and Cyprus have even lower percentages (Bom, Ghorashi, Maas, Poorthuis, & Verdonk, 2015).

[1] Definitions and demarcations of (slightly) different scientific fields are manifold. We adhere to She figures (EU 2012) in which the scientific field 'science' is a combination of (natural) science, mathematics and computing.

Though progress is reported, as in 2016 the percentage of female full professors in the Netherlands increased to 19.3%, gender balance in the Netherlands at the level of full professor positions is not expected to be attained before 2050 (Bom et al., 2015).

In the field of natural sciences, technology, engineering and mathematics (STEM), the disbalance between men and women is even larger. In the European Union in the STEM-fields of science, women fill on average 40% of PhD graduate positions and only 13.7% of full professor positions (EC, 2013). The Netherlands is again a poor performer. In 2013 in the Netherlands, only 9.7% of full professors in this field is a woman (EC, 2016).

My research focuses on a science faculty in the Netherlands. In 2014 this faculty is home to some 650 academic staff members and over 2.500 students. Research is organized in six research institutes, of which two are interfaculty. In line with Dutch data, the science faculty suffers from a structural imbalance in the proportion of men and women students and staff. The numbers in Figure 1.1 show that both in 2010 and in 2014, women are outnumbered by men from the PhD candidate level onwards, that the difference grows at every career step (up to the level of associate professor), and that the situation hardly improves from 2010 to 2014. In 2014, not even 10% of associate and full professor positions are occupied by women. Zooming in on the data regarding specific positions, a development towards even less balance is visible in a decreasing proportion of women PhD students (40% in 2010, and 35% in 2014), and women full professors (12% in 2010 and 9% in 2014). The proportion of women associate professors increased somewhat from 2010 to 2014. However, seeing that this increase concerned a step from a staggering 3% in 2010 to 5% women associate professors in 2014, this is hardly reason for optimism. Perhaps only the development in the position of assistant professors could be interpreted as a step towards more numerical balance between men and women: Between 2010 and 2014 the proportion of women assistant professors increased from 10% to 18%.

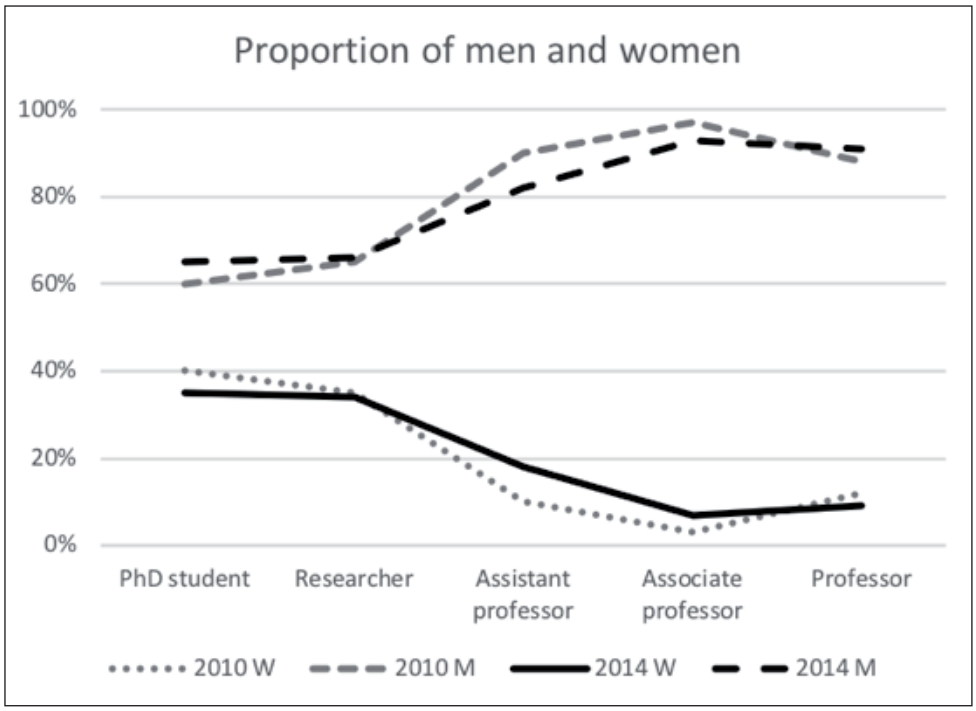

Figure 1.1. Proportions of men and women scientific staff at the case study science faculty (source: gender policy plan 2016-2020 of this faculty)

Aiming to abate the gender inequality that so obviously emanated from the enduring disbalance between numbers of men and women researchers, one of the research institutes participated in a gender equality intervention project in 2011-2015[2]. The other five research institutes participated in the subsequent European gender equality intervention project: EGERA[3]. My research concerns the research institutes participating in EGERA. Primary access to the institutes was achieved by a faculty board decision – supported by all directors from all institutes – to cooperate with the EGERA research team in order to address the unequal representation of women in all, but especially senior research positions.

The project was designed as participatory action research, and it was implemented

[2] EU FP7 project STAGES: Structural Transformation to Achieve Gender Equality in Science.

[3] The research was conducted as part of EGERA, a European FP7 research project on Effective Gender Equality in Research and the Academia.

between January 1, 2014 and December 31, 2017. The purpose was to create gender awareness amongst participants, construct a joint analysis of processes (re)creating gender inequality in the research institute, identify levers for policy change, and transfer problem ownership.

Thesis structure

Chapter 2. Methodology

In chapter 2, I first expand upon the gender equality interventions in my research. They were based upon participatory system dynamics, which I identify as a form of participatory action research. After having described the intervention in some detail, I explain how it suits my social constructionist research approach. Next, I expand upon research methodology, discussing data collection for the project as a whole. Finally, I reflect on my position as a researcher.

Chapter 3. Generating systemic gender knowledge

Gender scholars agree that gender inequality is systemic, that the interaction of inequality processes (re)creates, and sustains gender inequality (Acker, 1990, 1992). They also agree that participants to gender equality interventions which aim for organizational change, have to be aware of the structural, of the systemic character of inequality processes. However, a focused view on what this knowledge entails, is as yet missing. Working with both gender literature and literature on participatory system dynamics, this chapter aims to conceptualize systemic gender knowledge, and to increase insights into how participatory system dynamics supports the generation of systemic gender knowledge. The chapter explores what gender knowledge participants need to understand, to engage in and/or to support transformational change. To that end, I coin the concept of systemic gender knowledge. I argue that two characteristics make gender knowledge systemic: knowledge about interacting

processes, and endogenous thinking. In addition to this conceptual contribution to the literature on gender equality interventions, I develop an analytical framework to explore systemic gender knowledge, reconstructing graphical representations of participants' systemic gender knowledge. Finally, I conclude that the participatory system dynamics intervention in my case study research addresses systemic gender knowledge, because I found subtle, but observable changes in its two characteristics.

Chapter 4. Negotiating gender knowledge

The transfer of gender knowledge to organization members is key in gender intervention literature. Scholars argue that it is vital that participants to gender equality interventions increase their knowledge on how organizational processes (re)create gender inequality (Bird, 2011; Bleijenbergh & Van Engen, 2015; Bustelo et al., 2016; Ely & Meyerson, 2000b). This gender knowledge generation is a process said to be pervaded with power dynamics (Ferree & Verloo, 2016). Micro-level analyses of these power dynamics in participatory gender equality interventions would help understand gender knowledge generation. These analyses, however, are missing. Building on gender equality change literature and organizational becoming literature, this chapter aims to increase insights in power dynamics by researching negotiations on gender knowledge. The chapter explores knowledge negotiations regarding the transparency of hiring or promotion procedures between participants of three gender equality interventions. The research results lead me to conclude that three conditions in knowledge negotiations are key to the emergence of new gender knowledge. First of all, engagement with a topic is necessary to enable negotiations that enrich other participants' understanding of the topic, and that bring important insights to the table. Thus, these negotiations can result in participants sharing new gender knowledge. The second condition concerns the design of the intervention, which has to support reopening of negotiations. The third condition concerns sufficient attributed seniority of participants with gender expertise. Their participation is instrumental in securing that important gendered processes are negotiated, thus leading to new gender knowledge.

Chapter 5. Acting upon gender knowledge

Scholars contend that managers are an important target of gender equality interventions, as they are thought to be responsible for change. Thus, the aim of most gender equality interventions is to get managers 'own' the change: to transfer problem ownership to them. Though closely connected with accounts of resistance against responsibility and action (Callerstig, 2016; Cavaghan, 2017a; Connell, 2005; Lombardo & Mergaert, 2013; McRoy & Gibbs, 2009; Powell, Ah-King, & Hussénius, 2017), the notion of problem ownership is under researched. Drawing on literatures that consider resistance productive of change (Mumby, Thomas, Martí, & Seidl, 2017; Thomas & Davies, 2005a; Thomas & Hardy, 2011; Tsoukas, 2009), my research explores problem ownership of middle managers. The chapter first develops the concept of problem ownership, as a two-step notion consisting of first acknowledging responsibility and next expressing the willingness to act. I find that middle managers negotiate the extent of their problem ownership during the interventions, taking different positions regarding personal, group or no responsibility and action. I conclude that the classical dichotomy between 'walking' and 'talking' does not do justice to what happens in practice: there is a complex layering to problem ownership. In addition, I conclude that the creation of a semi-public and non-optional space for negotiations supports middle managers in articulating their problem ownership.

Chapter 6. General discussion

The final chapter of this thesis offers a general discussion. In this chapter I argue that my research has shown how participatory system dynamics can contribute to gender equality, impacting upon three key processes enabling transformational change: generating, negotiating and acting upon gender knowledge. In addition, in this final chapter I argue that my research contributes to gender equality change literature via the micro-lens that I have applied to gender knowledge negotiations. My contributions are threefold: I theorize how productive negotiations contribute to transformational

change, I identify design conditions enabling productive negotiations, and I reflect on the gap between democratic aims and power practices in participatory gender equality interventions, thus contributing to insights on transformational change. The chapter ends with some attention to limitations and future research questions, and a short conclusion.

Chapter 2

Methodology

Introduction

My dissertation research is conducted as participatory action research, a research strategy which is dedicated to social change through the generation of knowledge (Brinton Lykes & Crosby, 2014, p. 147). In this chapter I expand first on this research strategy. Next, I discuss how the field of participatory system dynamics and the method of group model building fit within this research strategy. Consequently, I focus on data collection and data analysis in my research. I end with a reflection on my position as a researcher in this participatory action research project.

Research approach

Participatory action research

Lewin (1946) is commonly recognized as the founding father of action research. His aim was to develop knowledge in order to solve problems through participation, with the researcher in the role of change agent (Huzzard & Johansson, 2014). Other researchers, most notably Freire (1970), Fals-Borda (1985) and Swantz (1996), developed and inspired participatory action research. The fourth frame of Ely and Meyerson (2000b, p. 113) and Meyerson and Kolb (2000), a radical transformational approach to gender equality change, is a well-known example of participatory action research.

In the half century of its evolvement, participatory action research is applied in many different ways, differing for instance with regards to the position of the researcher, the knowledge derived, or the method applied (Bleijenbergh, Van Arensbergen, & Lansu, 2018). As my research into gender equality interventions is closely linked to power relations, I will discuss participatory action research from a power perspective. Critical management studies apply such a perspective in the

distinction between different orientations of (participatory) action research, in effect between pragmatic versus critical orientations to action research (Johansson & Lindhult, 2008). The purpose of the pragmatic orientation is improving existing situations rather than turning them over, striving for cooperation and practical agreement through action and dialogue. According to Johansson and Lindhult (2008), the critical orientation to action research is characterized by resistant reflection rather than collaborative action, and by an acknowledgement of power dynamics. Other scholars also describe critical action research in terms of addressing power relations: "This view sees critical action research in terms of social analyses of organization and power in a local situation with a view to improving things, notably for those who are subjected to oppression or domination" (Huzzard & Johansson, 2014, p. 82). The pragmatic orientation is most in danger to be encapsulated in the system it tries to reform, which is a threat to all interventions aiming for transformational change (Acker, 2000), as I discussed in the previous chapter.

For the purpose of my dissertation, I zoom in on how participatory action research addresses power relations in knowledge production. I consider knowledge to be subjective, tacit and socially constructed (Alvesson & Kärreman, 2001, p. 998). Knowledge production in participatory action research concerns the processes which challenge hegemonic knowledges, giving space to knowledges that challenge the power of hegemonic discourse (Foucault, 1980, p. 84). Participatory action research aims to challenge and disempower hegemonic knowledge by critical reflection, thus creating "alternative thinking", and opening a path towards transformational change (Barros, 2010, p. 27; Freire, 1970).

In participatory action research, power and knowledge are intrinsically related (Alvesson & Kärreman, 2001). As a consequence, an important aim of participatory action research is to overturn traditional power/knowledge relations between researcher and researched. The 'scientific knowledge' of the researcher is not privileged beyond the local knowledge of participants; the researcher is

not empowered beyond the participants. The founding mother of this approach contends that participatory action research questions the "cultural arrogance" (Swantz, 1996, p. 124) of research that unilaterally decides on research goals, and that treats people as objects to be studied. Therefore, the change agenda of participatory action research has to be aligned with "the intentions and aspirations of the people with whom [the researcher] works" (Swantz, 1996, p. 125). In gender equality change interventions, this is not as clear-cut as in 'traditional' participatory action research. For one, scientific knowledge of gender inequality is often disputed by participants or gatekeepers whose hierarchical positions empower them over the researcher (Bleijenbergh, 2018; Van den Brink, 2015).

Participants with contextualized knowledge and/or personal involvement in an issue or problem and researchers "collaborate in learning and teaching activities to systematize and construct knowledge, enhance consciousness, and engage in transformative action for change" (Brinton Lykes & Crosby, 2014, p. 148). Thus, knowledge production is not the privilege of researchers. Rather the contrary: the knowledge of participants is central. In this way, participatory action research challenges hegemonic knowledges by power-levelling between the knowledges of researcher and participants. Methods that are used to engage in participatory action research should be able to support both the critical reflection on hegemonic knowledge, and collaboration in knowledge production between researchers and participants.

Participatory system dynamics

In this paragraph I discuss how participatory system dynamics as a research field aligns with participatory action research. System dynamics originates from the desire to help people understand how industrial systems work (Forrester, 1987). But system dynamics' ambitions reach further. Social problems, such as poverty, drug addiction, and gender inequality persist "because they are intrinsically systems problems – undesirable behaviours characteristic of the

system structures that produce them. They will yield only as we […] stop casting blame, see the system as the source of its own problems, and find the courage and wisdom to *restructure* it [italics in source]" (Meadows & Wright, 2008, p. 4). Mainstream system dynamics is often said to have a functionalist approach to systems as organisms (Smircich, 1983). It is characterized by its use of formal models, graphically displaying how the elements forming a dynamic system are interconnected in feedback loops. In mainstream system dynamics, a system dynamics model is "an objective representation of a real system" (Barlas, 1996, p. 187). The model represents a structure which necessarily drives the behaviour of the system, thus giving dominance to structure over agency.

However, the field of system dynamics has seen the development of a separate stream of participatory system dynamics (Antunes, Stave, Videira, & Santos, 2015; Lane, 1999; Lane, Munro, & Husemann, 2016; Stave, 2010; Vennix, 1996), away from a functionalist epistemology towards a more critical epistemology. This stream closely aligns with Smircich's description of the cognitive perspective on organization and culture (Smircich, 1983), viewing organizations as knowledge systems, leading to research questions about the "structures of knowledge in operation", research questions which can help people "who seek to understand, diagnose, and alter the way an organization is working" (p. 353). In participatory system dynamics, the persons participating in the analysis of a problem they want to change, jointly try to find out how organizational processes (re)create and sustain this problem. In terms of Smircich (1983): participants *seek to understand*, by charting the system; *diagnose*, by identifying important feedback loops; and *alter the way the organization works*, by identifying actions directed at these feedback loops. The research process of participatory system dynamics is thus a subjective search for causes, and the goal is an explanation in the form of causal mechanisms, enabling contingent and limited generalizations.

In terms of power relations, discussed in the previous paragraph, the field

of participatory system dynamics supports the process of knowledge production by participants, possibly leading to the production of reflective, 'alternative' knowledges. In the next paragraph I will zoom in on the intervention I used in my participatory action research: group model building, which is a specific intervention within participatory system dynamics[1]. I end this chapter reflecting on how this method aligns with power principles concerning knowledge production in participatory action research, and on my position as a researcher.

Group model building as participatory action research

Group model building is specifically designed to help solve 'messy' problems, in which different perspectives and values of participants lead to disagreement on the problem definition and analysis (Antunes et al., 2015; Lane, 2000; Rouwette, 2011; Vennix, 1996, 1999). I chose group model building as my intervention, as gender inequality in organizations typically qualifies as a 'messy' problem (Bleijenbergh, Benschop, et al., 2013): participants have different opinions on causes and consequences, on goals and methods, and even on the question whether gender inequality is a problem at all (Benschop & Verloo, 2006; Heiskanen et al., 2015).

Acknowledging, and working with the differences between participants in group model building, is thus one of the core principles of the method (Ackermann & Eden, 2011). In group model building, participants are considered to be experts on the issue that is the focus of analysis. Ideally, they each bring a unique perspective and expertise to the discussions. Through sharing and discussing their knowledge, participants learn from each other (Bleijenbergh, Benschop, et al., 2013; Bleijenbergh & Van Engen, 2015), and create "a common language" (Antunes et al., 2015, p. 348). This common language allows negotiations on meanings and importance of processes which are underlying the system (Lane, 1999; Stave & Kopainsky, 2017). The model

[1] In my empirical chapters, I use both terms without distinction.

that results from these negotiations is a representation, not of a single and fixed reality, but of a shared, context-dependent and temporary reality: "[models] are contingent, related intimately to a specific problem and to the group that is attempting to address that problem" (Lane, 2000, p. 16). Not only is the design of group model building geared towards negotiations; it also aims to give participants with different interests and perspectives equal opportunity to introduce, discuss, and reject or accept concepts (Rouwette, 2011). The general premise is that group model building is a 'democratic' intervention method, serving to mitigate power differences between participants (Van Nistelrooij, Rouwette, Vestijnen, & Vennix, 2012; Vennix, 1996).

Previously, I explained how participatory action research aims to address power relations regarding knowledge production. In this paragraph I discuss how group model building supports this aim. Participants to group model building are invited for their unique and diverse contributions to the analysis (Antunes et al., 2015; Bleijenbergh & Van Engen, 2015; Rouwette, Bleijenbergh, & Vennix, 2016; Vinkenburg, 2017). In my interventions, I aimed for this diversity by creating a balance between men and women participants, inviting both senior and junior faculty members. I invited managers as well, not only because they would contribute to the diversity of views on gender inequality, but also because of their possible role in the intervention results (De Vries, 2015; Kelan & Wratil, 2017; Mattis, 2001; Powell et al., 2017). Though the proportions of participating men and women were quite balanced (30 men, 35 women), participants in senior positions (senior faculty and managers) were in majority men. In other words, in the interventions, participating men predominantly filled positions of hierarchical seniority. However, group model building aims to mitigate power differences between participants by enabling democratic dialogue (Andersen, Vennix, Richardson, & Rouwette, 2007; Van Nistelrooij et al., 2012; Vennix, 1996).

Concerning the knowledge that is produced, group model building

supports the co-creation of knowledge by participants. The method supports the combination of experientially derived views and opinions with more theory-inspired views, both of faculty and of participating content specialists, such as gender experts. The latter may bring "to the dialogue theoretical views that may question the assumptions and theories-in-use of the participants […]" (Huzzard & Johansson, 2014, p. 87). In my interventions, all participants, including the participating gender expert, were invited to participate in the discussions as experts on the subject. By giving equal voice to all participants, the intervention supports the construction of 'alternative' knowledges (Foucault, 1980). In chapter 6, I will critically reflect on whether group model building succeeds in atoning democratic aims and power relations, both regarding the diversity of participants as well as the knowledge that is generated.

In addition, in group model building the facilitator has a special role, which is comparable to the role of a participatory researcher: "A participatory researcher acts as a catalyst for engendering a spirit of inquiry into areas in which the people themselves also have an interest. Asking questions that probe for a deeper meaning can set people thinking about their own problems and possible solutions. People get an opportunity to speak of things that are significant to them or give them hope, joy, or sadness" (Swantz, 1996, p. 124). Exactly as in participatory action research, the researcher is not supposed to address his or her own goals and agenda; the facilitator in group model building is supposed to take a neutral position towards the content of the discussion, and hence towards the knowledge the participants produce. I will critically reflect on the position of the facilitator at the end of this chapter.

Data collection and data analysis

My choice of participatory action research methodology flows from a social constructionist research paradigm (Bleijenbergh et al., 2018). I see organizations as socially constructed phenomena, implying that meaningful research needs to focus on the social enactments constructing the experienced social reality. A qualitative approach allows me to explore these social enactments, in order to inductively arrive at new conceptualizations of what is important in gender equality interventions. The data collection resulted in extensive data on a small number of interventions, enabling me to do the micro level analyses that are a valuable contribution to knowledge production. From my position as a social constructionist researcher, a deductive approach would not have yielded these new insights.

The intervention strategy

As described in the research context section of the introductory chapter, I facilitated five consecutive gender equality interventions in as many research institutes of a Dutch science faculty, aiming to address the disparate representation of women in (senior) faculty positions. In the following, I explain in some detail the general proceedings in these interventions, employing participatory system dynamics.

The intervention is carried out by a facilitation team which typically consists of two persons: the facilitator, who is primarily interacting with the group and guiding the process, and the model builder, who is primarily visualizing results on a screen, using specialized software. In the first research institute, one of my supervisors took the role of facilitator, and I acted as model builder. In the following four interventions, I took the role of facilitator, working with in total three different model builders. In one intervention, my supervisor acted as model builder.

Participants were personally invited by their scientific director, so participation was voluntary, though not completely optional. The participants consisted of a broad array of staff: from scientific director with a permanent position to junior researchers in temporary positions. The gender composition overall in all groups was balanced (five or six men, and six or seven women). However, in line with the overrepresentation of women in precarious positions in the faculty as a whole, there was some vertical segregation, with far more female than male temporary staff (see Table 2.1). As participation differed between sessions, and not everybody attended every session, the total number of participants in every institute exceeds the average number of participants in each intervention. In institute 5 this was most striking, as the total number of participants was eighteen, but on average in each of the three sessions eleven persons participated. This includes participating gender experts, who were social science researchers from the same university.

Table 2.1. Participants to the interventions as to research institute, function category and sex

Institute	Management		Faculty (including TT)		Temporary staff		Support staff		Gender experts		Subtotal		Total
	m	w	m	w	m	w	m	w	m	w	m	w	
1	2	1	3	2		1		1		1	5	6	11
2	1		4	2		3	1			2	6	7	13
3	1	1	4	4				1		1	5	7	12
4	2		2	5				1		1	4	7	11
5	1	1	7	2	2	2				2	10	8	18
Total	7	3	20	15	2	6	1	3		7	30	35	65

Each intervention generally took eight hours, divided over two or three sessions. In a regular two-session intervention, each session took four hours. In a three-session intervention, three hours were scheduled for the first two sessions, and two hours for the final session. In my research, two institutes opted for the three-session intervention from the outset, and three institutes opted for the two-session intervention. One of these

latter institutes applied for a third session of two hours. In sum, the five interventions of my research took thirteen sessions, and 42 hours in total.

Facilitators work with a choice of standardized scripts (Hovmand et al., 2012), which structure the processes in the sessions. In my research, we adhered to the following scripts. We first visualized the problem that the participants wanted to address, showing them how the proportions of women in academic positions decline with increasing seniority of these positions, while this situation hardly changes over time (charts over time). Next, we asked participants to individually list possible causes of this problem, followed by a group-wise inventory of these possible causes (nominal group technique). In this stage, we discouraged discussion about the causes, delaying this until the next phase.

This next phase concerned the actual 'building of the model'. Relevant processes and the causal relations between them are discussed one by one. They are visualized on the screen, 'added to the model', only after the discussion between participants has led to consensus about their explanatory value and specific meaning. Finally, participants identified levers for policy change, identifying which processes in the model the organization could hope to impact upon.

After the first session, the facilitators wrote a draft report, summarizing the process thus far, and presenting the causal model that participants had thus far constructed. Participants were invited to add to and change this preliminary model. In the two three-session interventions, a second draft report was sent out after the second session. After the final session, the facilitators wrote a final report, summarizing the process and presenting the final causal model and the levers for change. We sent the draft of this final report to all participants and finalized it after incorporating their feedback.

Data collection

Data sources in the participatory action research I engaged in, consist of the participants to the interventions, documents co-constructed with the group in the course of the intervention, and social situations before, during and after interventions.

My data collection resulted in a data set which I describe in words in this paragraph and summarize in Table 2.2 below.

Table 2.2. Data collection dissertation

Data collection			Data
Semi-structured interviews following a topic list	17 interviews	Approx 8 hours of interviews	12.000 words of interview reports
Open questionnaires before intervention	5 interventions		40 pages of written answers
Open questionnaires after intervention	5 interventions		40 pages of written answers
Audio taping of the interventions	13 intervention sessions with 65 different participants	42 hours of audio tape	230.000 words of verbatim transcriptions
Draft intervention reports, co-constructed in the course of the intervention	7 draft reports		89 pages of draft reports
Final intervention reports, co-constructed after the intervention	5 final reports		79 pages of final reports
Research memo's	13 intervention sessions		Field notes

Prior to each group model building intervention, I engaged three to four participants in a private semi-structured interview of about half an hour, with the aim of getting to know some participants and their take on the problem before the intervention started. I always interviewed the scientific or the managing director of the institute, and sometimes both, as I expected they would give me an idea of dominant local gender knowledge (Cavaghan, 2013). In addition, I interviewed one or two participants, whom the scientific or managing director thought would have a specific perspective on the situation regarding gender equality in the institute. I interviewed all participants at a location of their choice, most often their office at work. I used the same topic list for all interviewees, asking them first about the situation regarding gender inequality at their institute. Next, I asked them what they knew about previous attempts to change things. My third question concerned

the barriers and possibilities for change they saw at their institute. Finally, I asked them what their expectations were of the intervention they were to participate in. This question also was an opportunity for participants to ask questions about what the intervention would entail. I did not tape the interviews, because I wanted to create an atmosphere of confidentiality, in order for these participants to feel free to speak their minds. I did however take extensive notes, and reworked my notes immediately following each interview into an interview report.
Immediately preceding each intervention, I requested participants to fill in an open questionnaire (adapted from Fokkinga, Bleijenbergh, and Vennix (2009). I asked them to give their opinion on what the central issue is that needs to be discussed, on what processes cause this issue to persist, and on the consequences of this issue. I used this questionnaire to explore the systemic gender knowledge of all participants, and to set off initial group discussions about gender equality. Participants filled out the same questionnaire immediately after the intervention, in order to enable me to explore differences in systemic gender knowledge before and after the intervention.

All participants gave me permission to audio tape the intervention under the condition that their contributions to the interventions would be anonymized. Each intervention consisted for a substantial part of discussions between on average eleven participants, with sometimes several of them talking at the same time. In two interventions, participants did some work in sub groups. I was unable to transcribe the discussions in these sub groups. In addition, I did not try to transcribe discussions that were taped during breaks. All in all, the intervention sessions, which took 42 hours in total, resulted in the transcription of approximately 32 hours of audio recording. The tapes were transcribed verbatim, following transcription rules that focus on content (Kuckartz, Dresing, Rädiker, & Stefer, 2008). This resulted in a total transcript of over 230.000 words.

The fourth source of data are the draft and final written reports, containing the models and levers for policy change that participants reached consensus

on. The reports were an explicit part of the intervention, to archive the socially constructed shared meaning making that took place during the discussions (Black, 2013). Participants were invited to give feedback on the draft reports; their feedback was included in the finalized reports.

The final source of data are my participant observations (Buch & Staller, 2014). I wrote field notes based on my observations directly after intervention sessions, after conversations with colleagues, and after preparatory sessions with research institute's management. The field notes enabled me to make sense of events and social relations, and of my hybrid position as both a 'neutral' facilitator, and a gender researcher with a change agenda. I rely on my field notes in my reflection on the research.

Data analysis

In each empirical chapter of my dissertation research, I have used the data of a subset of the interventions. In order to preserve anonymity, institutes and participants have received no, or different aliases in each chapter. In addition, the order in which I mention institutes, both here and in the chapters, is not related to the order in which they participated in the interventions.

In chapter 3, I used the data from the open questionnaires and the audio tapes, gathered in Institute A and Institute B. I analysed participants' written answers to the open questionnaires before and after the interventions and visualized this in models containing gender inequality processes and causal links between them. Thus, I achieved a graphical representation of their answers, visualizing my interpretation of their knowledge at that moment of gender inequality processes. This data analysis enabled me to explore the systemic gender knowledge of participants, and to explore possible shifts in this knowledge before and after the intervention. The audio data enabled me to validate my findings.

In chapter 4, I analysed the draft and final written reports, as well as the transcriptions of the audio taped interventions in Institute B, C and D. I applied

qualitative content analysis (Boeije, 2009) to select and code the discussions, searching for episodes concerning the negotiation on hiring/promotion policies, which I suspected – based on literature – would be sites/expressions of power dynamics. This was necessary to select relevant episodes from the vast amount of data. Next, I applied a micro-level content analysis of these negotiation episodes, using the work Thomas, Sargent, and Hardy (2011) as an operationalization of power dynamics. I abductively adapted their framework in iterative steps, going from the research data to their list, and vice versa.

In chapter 5, I used data from interventions in Institutes C, D, and E. The data consist of interview reports with six participating managers before the intervention, transcriptions of audio taped interventions, and researcher memos written before, during and after the interventions. I applied qualitative content analysis to select relevant episodes from the data (Boeije, 2009). Going through the data iteratively, I identified all discussions during the intervention on problem ownership, involving at least one of the managers. Next, I engaged in systematic micro-level explorations of the selected episodes on how managers negotiate their role in gender equality interventions.

Reflexivity

I conclude this chapter with a reflection upon my position in the participatory action research project. Central to this position are my roles as a researcher and as a facilitator in the group model building interventions. I first discuss my role as a facilitator.

In group model building, the facilitator role is key in making the intervention work. A group model building facilitator is responsible for the group process, interacting with the participants, striving to give them equal voice, helping them to decide what underlying processes are important, guiding them through brainstorm

phases in which discussions should be avoided, and evaluative phases in which discussions are paramount to expose important but sometimes painful differences between participants' views on the problem at hand. All this is happening real time. During an intervention of three to four hours, there is little time to sit back, reflect on what is happening, change course if needed.

Being a group model building facilitator requires technical skills as well as group process skills (Vennix, 1996). Technical skills comprise knowledge about variables, positive and negative causal relations, feedback loops, systems archetypes, et cetera. The list of group process skills is even longer, and comprises both cognitive and affective skills, such as group process structuring skills, conflict handling skills, communication skills, concentration skills, team building skills, intervention skills, skills to handle different types of cognitive tasks, and skills to build consensus and commitment (Vennix, 1996, pp. 151-170). Both sets of skills depend on the 'right' facilitator attitudes: being helpful, inquiring, neutral, and acting with authenticity and integrity (Vennix, 1996, pp. 147-150). The role of the facilitator is nothing less than vital: "The group interaction process is to a large extent determined by the facilitator's behaviour, which is in turn a function of his or her attitudes" (Vennix, 1996, p. 170). In addition, discussing gender inequality in a heterogenous group consisting of participants from different hierarchical positions, with different interests, opinions and beliefs, is a recipe for conflict, as my research will show. And "[t]he messier the problem, and the higher the level of conflict in the group, the more critical the role of the facilitator" (Vennix, 1996, p. 171).

If this list of skills and attitudes in itself is not long enough, making the role of a facilitator a difficult one, there is another challenge, which Vennix does not mention. His list of required skills and attitudes relates to a disembodied facilitator, and is thus very much reminiscent of a disembodied worker (Acker, 1992). The disembodied worker generally "valorises the male body and masculinity", especially in managerial and professional environments (Hardy & Thomas, 2015, p. 683). Female embodiment incurs disadvantageous stereotypical traits

concerning, for instance, attributed seniority and competence (Valian, 1999). Women in managerial and professional environments, which privilege masculinity, tend to abstract away from their bodies to emphasize their professionality (Berger, Benschop, & van den Brink, 2015). Ridgeway (2009) even suggests there is no escape, because gender is a primary status characteristic, giving women less status than men in the same position. Thus, my being a woman does not support my authority as a facilitator.

Possibly subtracting from my authority as well, was the implicit tension between my roles of a gender researcher, a facilitator and an activist. My co-researchers and I explicitly identified as gender researchers, involved in a European project aiming to increase gender equality in academia. This made me a probable feminist; an activist whose goal was clear from the start of the interventions. However, in group model building, the facilitator role is to facilitate the process of the participants; the goal of a facilitator is to help participants build a causal model of a problem, based on their contextualized knowledge of this problem (Vennix, 1996). So, the facilitator is to take a neutral position towards content, giving all participants equal voice, finding the middle ground of group consensus. Offering expert knowledge, as a facilitator, is a highly marked action, disrupting the process of group model building. Generally, this division between process and content contributions is quite natural, as the facilitator is not a content expert on the subject of the intervention. However, I did have expert knowledge on the problem the group was modelling. As a researcher, sometimes I was pleased with the level of insight in gender inequality processes my participants displayed, and sometimes I was shocked because of their individualistic, essentialist explanations. As a facilitator, I refrained from commenting, sticking to my 'neutral' position. As an activist, I sometimes ground my teeth, despairing the lack of obvious progress. I think this might easily have resulted in me sending out mixed signals, detracting from my authority as a facilitator.

To conclude this paragraph, I discuss the traditional tension in participatory

action research between action and research. I focus on the way my role of activist interacted with my role of researcher. These roles interacted to such a degree that I sometimes felt like a double agent, supporting groups in finding ways to decrease gender inequality, but at the same time generating data for my research. Scholars describe how participatory action research entails "both instances of closeness to and distance from the field. […] A key dilemma for the critical action researcher is, on the one hand, maintaining a close, high-trust relationship with actors in the field and, on the other hand, having sufficient distance or autonomy from them to be able to write critically about her engagement with the field" (Huzzard & Johansson, 2014, p. 82). This dilemma is strengthened by expectations in the form of an often implicit "contract between researcher and the field that pulls in two opposite directions", possibly leading to either too much action or too little research (Huzzard & Johansson, 2014, p. 86). Thus, partaking in the action and researching it at the same time can be at odds with each other because of conflicting researcher goals and activist goals. The more a researcher connects with participants, takes an insider perspective, builds a close relation with participants, the more participants probably expect the researcher to be an activist. As discussed above, I did strive for a neutral position as a facilitator during the interventions. Apart from the effects on my authority, this also resulted in my keeping some distance from participants.

This distance during interventions was continued after the interventions. After I had produced the final report in each intervention, I did not engage anymore with the research institutes, though several of my colleagues did. They were involved in the gender equality committee that was instituted half a year after the first intervention, gave advice about gender policy development and implementation, executed gender equality culture surveys, and developed trainings for selection committees. My position as a relative outsider, disengaging myself after the intervention sessions (Bleijenbergh et al., 2018), helped me in giving priority to my needs as a researcher.

Also, I felt a double agent in the interventions from the perspective of the covert and overt resistance the project evoked. As a facilitator, I encountered covert resistance, for example when managers skipped sessions, while the schedule was designed to accommodate their agenda's (Lombardo & Mergaert, 2013; Mergaert & Lombardo, 2014). Sometimes resistance was not the right term for what I encountered, for example when one of the scientific directors admitted to me that: "If it were up to me, I would not have organized these sessions". As he did organize the sessions, I would categorize the remark as reticence rather than resistance, but the explicit nature of this reticence did make an impact on me. I swallowed derogatory remarks, one of them diminishing an eight-hour group effort to a nice way to while away some time ("Yeah, I liked it. But I like sudoku too"). Resistance gave me sleepless nights thinking about how I could have done better. As I am an eager-to-please kind of person, wanting very much to keep people happy and to avoid confrontations, the occurrence of these frictions was difficult to deal with. Even knowing that resistance to gender equality interventions is a fact of life, and realizing that this resistance had little to do with me as a person or an academic (Bleijenbergh, 2018), participants' resistance to the interventions made me feel insecure as a person and as an academic. Simultaneously, I recognized that these difficult situations were a goldmine for my research. They enabled me to experience what problem ownership means, how negotiations can use conflict to build new knowledge, how friction is a necessary component of change: "*conflict* reveals power structures and it is only through conflict that efforts can be made to secure the micro-emancipation at the heart of critical action research ambitions" (Huzzard & Johansson, 2014, p. 85). My efforts may have contributed to change, exactly because they engendered conflict and resistance. I will revisit this topic in chapter 6, in addressing the design conditions for gender equality interventions aiming for transformational change.

In chapter 6, I will also reflect upon the methodological limitations of my participatory action research approach.

Chapter 3

Seeing the system. Systemic gender knowledge to support transformational change towards gender equality in science

Scholars agree that gender inequality is systemic, and that participants in gender equality interventions need knowledge on gender inequality processes. However, a detailed view on the specific characteristics of this knowledge is as yet missing. This chapter[1] *aims to contribute to gender equality interventions by conceptualizing and visualizing systemic gender knowledge as an important condition for transformational change. Combining gender and participatory system dynamics literature, this chapter first introduces the concept of systemic gender knowledge. This concept captures two main characteristics that make gender knowledge systemic: knowledge on the interaction of gender inequality processes, and endogenous thinking, here implying a focus on the organization as the relevant level of analysis. In addition to this conceptual contribution, the research contributes methodologically to the gender inequality intervention literature by designing a visualization process, translating written texts into system dynamics models which enable exploration of systemic gender knowledge. Finally, the research contributes empirically by exploring the systemic gender knowledge of participants in two science research institutes of a Dutch university, finding shifts in both characteristics of systemic gender knowledge. This enables researchers to discern whether gender equality interventions lead to increases in systemic gender knowledge, thus supporting transformational change.*

[1] This chapter is based on an article, which at the time of printing is published online as: Lansu, M., Bleijenbergh, I., & Benschop Y. (2019). Seeing the system. Systemic gender knowledge to support transformational change towards gender equality in science. *Gender, Work and Organization*. Earlier versions of this chapter have been presented at the conferences Equal is not enough in Antwerp, and EGOS in Athens, both in 2015.

Introduction

This chapter contributes to gender equality change literature by exploring an important condition for transformational change: gender knowledge. Contemporary insights in gender equality interventions purport that sustainable gender equality can only be reached via transformational change: it is organizations that need to structurally transform the way they work in order to increase gender equality (Calás et al., 2014; Ely & Meyerson, 2000b, p. 133). However, questions on how this transformational change is to be achieved, are at best partially answered. Reports on gender equality interventions show that progress is slow, difficult, context-dependent, and everything but straightforward (Benschop et al., 2012; Dobbin & Kalev, 2016; Moss-Racusin et al., 2014; Parsons & Priola, 2013). In other words: there is no highway to gender equality. It is necessary to seek progress via small, and often twisting roads. One of these roads concerns the knowledge that organization members have about processes and practices (re)creating gender inequality. Though knowledge never is a sole or sufficient condition for change, scholars do argue that it is important that organization members know how gender inequality results from gender inequality processes and practices (Benschop et al., 2015; Benschop & Van den Brink, 2014; Bird, 2011; Bustelo et al., 2016; Ely & Meyerson, 2000b). The argument is that, once organization members are knowledgeable about how organizational practices produce gender inequality, "these practices become potential targets for experimentation and change" (Meyerson & Kolb, 2000, p. 564). Thus, change efforts are argued to hinge on knowledge that recognizes and attaches importance to the role of gendered processes and organizational practices in (re)creating gender inequality. This gender knowledge is a central concept in transformational change efforts. Cavaghan (2013, 2017b), for instance, shows how new gender knowledge competes with dominant gender knowledge, which most often does not support transformational change. Other scholars report how

expert gender knowledge is disregarded or disreputed (Bleijenbergh, 2018; Moss-Racusin et al., 2015; Van den Brink, 2015). However, a focused view on the specific characteristics of this gender knowledge is as yet missing. For instance, gender equality interventions often aim at implicit bias as the main lever for change (Vinkenburg, 2017), which possibly restricts the focus to interactions between people without addressing the organizational structures that produce inequalities. Transformational change is not likely to emerge from this narrow focus. Another example concerns the Gender Equality Training Toolkit, which explicitly aims at transformative change, but does not describe gender knowledge beyond the general "knowledge about gender concepts and issues" (EIGE, 2016, p. 13). It is therefore important to explore what characteristics of gender knowledge scholars refer to when they discuss the need of knowledge to support transformational change.

This chapter aims to explore what gender knowledge participants need to understand, engage in and/or support transformational change towards gender equality. It contributes to the literature on gender equality interventions (Benschop et al., 2015; Benschop & Van den Brink, 2014; Bird, 2011; Britton & Logan, 2008; Bustelo et al., 2016) by coining the concept of systemic gender knowledge and detailing two characteristics of this knowledge, by developing an analytical tool to explore this systemic gender knowledge and by using this tool to explore the systemic gender knowledge of participants to two gender equality interventions. To this end, we first need to conceptualize what gender knowledge supports transformational change. We will argue that two characteristics of gender knowledge are crucial in what we will call systemic gender knowledge. In doing so, we draw from both gender equality change literature (Acker, 1990, 1992; Bird, 2011; Calás et al., 2014; De Vries, 2015; De Vries & Van den Brink, 2016) as well as participatory system dynamics literature (Antunes et al., 2015; Lane, 1999; Vennix, 1996). Though system dynamics is prevalently known as a functionalist approach (Smircich, 1983), the more recently emerging participatory

system dynamics is a European stream working from a social-constructivist paradigm. In this chapter we will first explain in depth why we think participatory system dynamics is valuable in conceptualizing systemic gender knowledge. Next, using participatory system dynamics concepts, we define what exactly makes gender knowledge systemic. Finally, we explore the systemic gender knowledge of organization members who participated to gender equality interventions in two research institutes of a Dutch science faculty. These interventions used a participatory system dynamics approach, facilitating organizational members in sharing and developing knowledge (Antunes et al., 2015; Lane, 1999; Lane et al., 2016; Stave, 2010; Vennix, 1996).

A processes' view on gender inequality

Gender inequality processes are often referred to as being systemic. Acker referred to "the system of inequality" (Acker, 2006b, p. 454), and the low representation of women being caused by "system processes" (ibid., p. 457). Calás et al. (2014, p. 28) pose that attention for gendering processes makes it possible to observe: "[…] the production and reproduction of socially systemic inequalities", and De Vries (2015, p. 22) examines the role of male change leaders who are "expected to disrupt systemic gendering processes." A final example showing how gender inequality processes are characterized as systemic is from Bird (2011, p. 202), who states that participants in transformational change interventions should recognize "how systemic barriers operate and why these barriers disproportionately disadvantage women." But what exactly does it mean that gender inequality processes are systemic? The literature that labels gender inequality processes as systemic does not provide many specifics. Sociologist Joan Acker (1990, 1992) did describe the system underlying gender inequality: she conceptualized gender inequality as being sustained and (re)created by sets of

interacting inequality processes, distinguishing structure, culture, interaction, identity, and organizational logic. These processes proved to be a useful heuristic to analyse and understand the persistent construction of gender inequality in organizations, as "a framework for seeing inequality" (Benschop & Doorewaard, 2012; Britton & Logan, 2008, p. 118; Dye, 2006). In other words: Acker's framework points out relevant organizational and societal processes active in generating and supporting gender inequality in organizations. For instance, Acker (2006b, p. 457) discusses an intervention reported by Ely and Meyerson (2000a). In this intervention, management did recognize that "dysfunctional ways of behaviour", such as rewarding heroism when enacted by men and denigrating women who behave in the same way, was bad for business, but they did not see that "culture and organizing practices" caused this behaviour: "[…] the low representation of women in top jobs was still due to the failure of individual women, not system processes."

However, this framework leaves room for further exploration and more specificity. First of all, Acker's (1990, 1992) gender inequality processes are widely – and almost routinely – represented as interacting, without explication on how, and with what effects they interact. Therefore, her framework leaves unanswered questions as how to represent the interaction between the processes. In addition, it is unclear what processes need to be taken into account when analysing gender inequality in organizations. Acker herself was somewhat unclear on the boundaries of her framework (Dye, 2006). First she included society in the framework processes, identifying "the institutionalized means of maintaining the divisions in the structures of labor markets, the family, the state", referring to processes "that produce gendered social structures, including organizations", and to society-informed organizational logic as the fifth process (Acker, 1990, p. 146). Later she related four processes exclusively to gendered organizations, referring to a gendered substructure underlying the gendered processes (Acker, 1992). Gendered substructure thus replaced the fifth process of organizational

logic. By conceptualizing gendered substructures, Acker further zoomed in on processes of gender inequality at the organizational level. This is continued in Acker's later characterization of organizations as inequality regimes, in which she notes how societal inequalities originate in organizations (Acker, 2006a, 2006b). Calás et al. (2014) confirm the importance of an organizational lens for understanding gender inequality. Organizations are a site of gendering processes (re)producing gender inequality: "[o]rganizational practices and activities are concrete relational contexts where […] gendering processes may become visible" (Calás et al., 2014, p. 28). Yet, while the system of gender inequality is evidently not restricted to the organizational level, improving gender equality in work organizations requires a focus on that organizational level. So, gender inequality is systemic in the sense that processes producing gender inequality are ubiquitous, simultaneous and mutually constitutive, and occur at multiple levels; societal, organizational, individual.

We argue that a system dynamics perspective can help to elaborate on the interaction of the various processes of gender inequality. System dynamics acknowledges that a complex system (such as an organization) is more than the sum of its parts. It is the interactions between the parts of the system – the underlying structure of the system – which explain the behaviour of the system. System dynamics allows the examination of the interactions between separate processes, acknowledging their simultaneity and inseparability. In addition, system dynamics argues that there are no separate systems: it depends on the purpose of the discussion where to draw a boundary around a system (Meadows & Wright, 2008). This need to understand the interaction of underlying processes of a system in order to make sense of the system as a whole is recognized both in system dynamics literature (Forrester, 1987; Meadows & Wright, 2008) as well as in gender inequality literature (Bleijenbergh & Van Engen, 2015; Vinkenburg, 2017). System dynamics literature enables us to elaborate on this principle, introducing the concept of systemic gender knowledge. We will do this by

specifically drawing on participatory system dynamics literature, which supports an interpretivist approach to system dynamics.

Participatory system dynamics

Mainstream system dynamics is said to have a functionalist approach to systems as organisms (Smircich, 1983). Within this stream, a system dynamics model is "an objective representation of a real system" (Barlas, 1996, p. 187). This model represents a structure which necessarily drives the behaviour of the system. According to the founding father of mainstream system dynamics, Jay Wright Forrester, system dynamics is designed not only to help people understand how systems work, supplying them with new knowledge, but also to change the way they think about such a system, and thus replacing existing knowledge with superior new knowledge (Forrester, 1987, p. 136). However, the field of system dynamics has seen the development of a separate stream of participatory system dynamics (Antunes et al., 2015; Lane, 1999; Lane et al., 2016; Stave, 2010; Vennix, 1996), away from a functionalist epistemology towards a more interpretivist epistemology. This stream closely aligns with Smircich's description of the cognitive perspective on organization and culture (Smircich, 1983), viewing organizations as knowledge systems, leading to research questions about the "structures of knowledge in operation", research questions which can help "those who seek to understand, diagnose, and alter the way an organization is working" (p. 353). In participatory system dynamics, the persons participating in the analysis of the organization analyse how a problem is the result of organizational processes.

We argue that the interpretivist onto-epistemological footing of this emerging European stream of participatory system dynamics (Antunes et al., 2015; Barlas, 1996; Lane, 1999, 2000) makes this stream suited to inform our conceptualization of systemic gender knowledge. Participatory system dynamics aims to improve decision-making processes by involving "multiple [participants]

who often have different values, different views about the world and disagree about the problem formulation, management goals and decision criteria" (Antunes et al., 2015, p. 346). Participatory system dynamics brings participants together on the express acknowledgment that their opinions, views on and beliefs about the problem differ (Vennix, 1996, Rouwette, 2011, Lane, 2000). Participatory system dynamics enables participants to discuss these subjective meanings and share frames of reference in trying to establish the contextual rules that function in their organization. Thus, "system dynamics methodology creates a common language" (Antunes et al., 2015, p. 348), which "allow[s] the meaning and importance of system elements to be negotiated" (Stave & Kopainsky, 2017, p. 33), helping "human agents to create their social worlds via debate and the construction of shared meaning" (Lane, 1999, p. 517). Especially this characteristic of participatory system dynamics, enabling negotiations on multiple, subjective meanings, decides the method's fit in an interpretivist paradigm. The group model resulting from these negotiations is a representation, not of a single and fixed reality, but of a shared, context-dependent and temporary reality: "[models] are contingent, related intimately to a specific problem and to the group that is attempting to address that problem" (Lane, 2000. p. 16).

Systemic gender knowledge

Two characteristics of systems thinking crucially link to analyses of gender inequality processes. The first characteristic is firmly grounded in notions of causality. This causality is not linear, implying uni-directionality, but interactive, implying multidirectionality. Systems thinking supports the view that "causal mechanisms both reinforce and undermine one another, they operate alongside other (as yet) unknown mechanisms, and the combination of mechanisms differs from situation to situation" (Scott, 1995, p. 173, quoted in Lane, 2000, p. 13). These 'causal mechanisms', which we will refer to as processes, are interconnected in so called feedback loops. Feedback loops graphically visualize how processes

interact in a particular model, resulting from deliberations of a particular group in a particular situation concerning a particular problem. The second defining characteristic of systems thinking concerns the boundaries of the system: the processes that are incorporated in the model explain the problematic behaviour of the system. We will refer to this characteristic as endogenous thinking. It means that a problem analysis incorporates relevant processes and does not point to "independent forces from the outside" in explaining how the system generates problematic behaviour (Richardson & Anderson, 2010). Explaining problems by blaming external processes is a common phenomenon: "People are far more comfortable blaming their troubles on uncontrollable external causes than looking into their own policies as the central cause" (Forrester, 1987, p. 142). Scapegoating external processes is common in organizations, who tend to see themselves as a neutral stage for gender inequality processes occurring in society or between individuals (Calás et al., 2014). However, in order to understand how gender inequality processes are (re)created in the organization, the organization needs to be the central focus of analysis. Endogenous thinking bars the notion that a systemic problem can be understood by identifying external forces. In other words: if the problem that needs to be understood is organizational, endogenous thinking implies that the focus of the analysis is on the organizational level. Exogenous causes are excluded in order to better understand how the dynamics of the system that is the subject of analysis work (Richardson, 2011).

From these characteristics of systems thinking, two important characteristics of systemic gender knowledge emerge. First of all, systemic gender knowledge implies knowledge on interacting processes that are both cause and consequence of the systemic problem of gender inequality. Secondly, systemic gender knowledge displays endogenous thinking, implying that the (re)creation of gender inequality is analysed at the level at which the problem needs to be understood. We are now able to define systemic gender knowledge as an endogenous view on interacting processes (re)producing gender inequality.

In the following, we describe the process we devised to construct graphical system dynamics models from written texts, which we call visualization of systemic gender knowledge. The models resulting from this visualization process enable us to explore systemic gender knowledge.

Visualization of systemic gender knowledge

In order to explore systemic gender knowledge, we need a language that allows us to detail and visualize the concept. Using the graphical language of system dynamics, we can show why, for instance, the phrase "*The proportion of women scientists in this institute is low because the general image of a scientist is masculine and because women choose to work part time*", displays less systemic gender knowledge than the phrase "*It is a vicious cycle. A low proportion of women scientists in the institute keeps the masculine image in society of scientists alive, which negatively affects the attractiveness of science for women in society as a whole and hence of our institute.*" Figure 3.1 provides the graphic translation of these two phrases into models. Model 1a on the left visualizes the first phrase. In model 1a we see that an increase in 'masculinity of image scientist' and 'women's choice for part time work' both independently decrease the 'proportion of women scientists in this institute'. As to the presence of both characteristics of systemic gender knowledge, we find first of all that this model does not display knowledge about interactions between processes, as there are no feedback loops. Secondly, the model does not explain how organizational processes re(create) gender inequality, as the focus is not on processes at the level of the organization. Therefore, the second characteristic of systemic gender knowledge, endogenous thinking, is absent in model 1a as well. The phrase that is visualized in model 1a does not display systemic gender knowledge.

In comparison, the second model (1b) shows systemic gender knowledge on both characteristics. First of all, in model 1b the processes interact: they form a feedback loop. The feedback loop explains that when the proportion of women

scientists in the institute decreases, the masculine image of the scientist increases, which decreases the attractiveness of science for women in society. This will decrease the attractiveness of the institute, which in turn will further decrease the proportion of women scientists in the institute. Secondly, the example shows endogenous thinking, as the processes explain the (re)creation of gender inequality at the organizational level. The processes on societal level add to the understanding of inequality processes in the organization, because they are part of the feedback loop and thus not analysed as an 'external cause' of inequality processes in the organization.

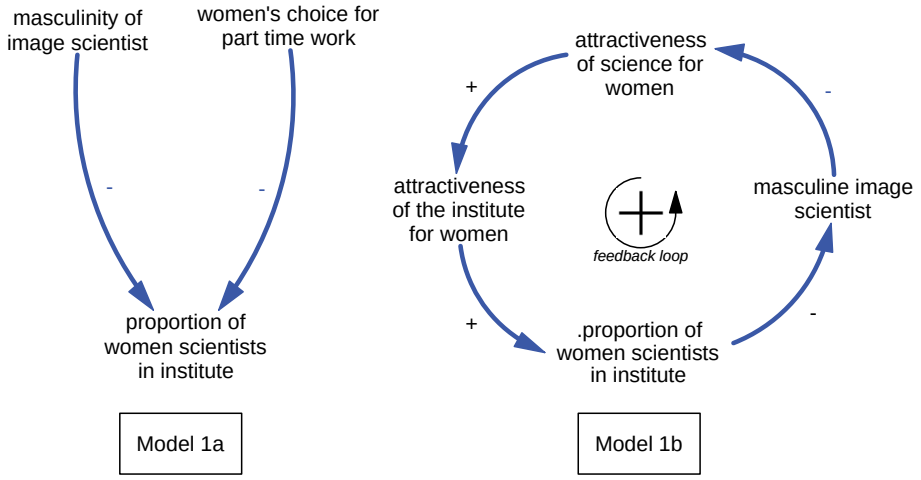

Figure 3.1. Modelling systemic gender knowledge

These examples show how graphical language of system dynamics can be helpful in the exploration of systemic gender knowledge. Next, we describe our exploration of the concept in a case-study of two gender equality interventions, which aimed to support transformational change towards gender equality in science.

Methodology

We explored systemic gender knowledge in gender equality interventions in two different research institutes during action research at a Dutch university science faculty. Action research is based upon the notion "that human systems could only be understood and changed if one involved the members of the system in the inquiry process itself" (Brydon-Miller, Greenwood, & Maguire, 2003, pp. 13-14). The top management of the science faculty was committed to participate in the action research, as the faculty struggled with an enduring numerical imbalance in men and women scientific staff. The proportion of women scientific staff is below European and Dutch averages in science. In the research institutes where the case studies were performed, the overwhelming majority of scientific staff consists of men. Statistics on the years 2008-2014, provided by the science faculty, show that full professorships in these institutes are, and have been, almost exclusively (around 95%) occupied by men, whereas the percentage of men PhD students is around 80%. This situation hardly changes over time.

The intervention strategy

Group model building, the method that was used in the interventions, is a form of participatory system dynamics supporting group learning (Vennix, 1996). During group model building, a facilitator supports participants in constructing a model that visualizes the dynamic structure of the problem that the participants aim to understand. Group model building is specifically employed with complex problems that are 'messy', meaning that different opinions and values of participants lead to varying descriptions of these problems (Vennix, 1996, 1999). Therefore, these interventions aim to involve a diversity of participants. It depends on the problem whether participants are employees of a single organization, or representatives from different organizations. Group model building engages participants in "[…] system mapping exercises aimed at opening up debates and promoting ideas

exchange" (Antunes et al., 2015, p. 347). Because participants' opinions differ on causes and consequences, on goals and methods, and on the question whether there is a gender problem at all (Benschop & Verloo, 2006; Heiskanen et al., 2015), gender inequality qualifies as a messy problem (Bleijenbergh, Benschop, et al., 2013). A pilot study showed that group model building is "applicable to model the messy problem of gender inequality within organizations" (Bleijenbergh, Benschop, et al., 2013, p. 92), and it was described as a viable intervention for transformational change (Vinkenburg, 2017). Vennix (1996, pp. 5-6), argues that the process of building a model with a group of participants aims to create a "shared social reality." The intervention fits with participatory action research, as it aims to be 'democratic', enabling voices of all participants to be heard (Bleijenbergh & Van Engen, 2015; Van Nistelrooij et al., 2012; Vennix, 1996). In addition, participant involvement in the construction of the model builds shared ownership of the resulting policy recommendations (Stave & Kopainsky, 2017). Commitment to the results of the group model building process is generally high (Rouwette, 2011).

Each intervention consisted of two four-hour-sessions of group model building, planned two weeks apart. Both interventions were led by a two-person team of facilitators, consisting of the author of this chapter and a different colleague for each intervention. Participants were employees of two natural sciences research institutes, invited by the scientific directors of both research institutes with the aim to involve a variety of participants in different hierarchical positions, with different expertise and interests regarding the problem of gender inequality. The managers participating to the group model building in institute 1 were the dean of the faculty, and the scientific and managing directors of the institute. In institute 2, the scientific director attended. The other participants were academic staff employed by the institute (from full professors to post docs), and support staff. In addition, in each intervention a different female gender researcher from the same university participated. We did not ask these gender

researchers to fill out the questionnaires, as we did not research the development of their gender knowledge. Table 3.1 gives an overview of all men and women participants and questionnaires for each intervention. The goal of the interventions was to enhance team learning on the issue and to support the commitment to implementation of change (Bleijenbergh & Van Engen, 2015). Participation was voluntary.

Table 3.1. Participants and questionnaires

Institute	**Management**		**Faculty**		**Support staff**		**Subtotal**		**Total**
	m	*w*	*m*	*w*	*m*	*w*	*m*	*w*	
Institute 1	2	1	3	4		1	5	5	11
Institute 2	1		4	6	1		6	5	12
Total # of participants	**3**	**1**	**7**	**10**	**1**	**1**	**11**	**10**	**23**
Questionnaires	3	1	4	5	1	-	8	6	14

Data collection

The data set consists of verbatim transcriptions of the audio taped intervention sessions (16 hours) and of open questionnaires, filled out by participants both before and after the intervention. We used this open questionnaire to explore the systemic gender knowledge of participants (adapted from Fokkinga et al. (2009). Twenty-one participants submitted their written answers to the questionnaires. Seven of them submitted only one questionnaire, either before or after the intervention, predominantly because they attended only one of the sessions. These incomplete sets were excluded from the analysis. Thus, the resulting data set consists of the questionnaires of the fourteen science faculty staff members who submitted answers to the questionnaire both before and after their participation in the intervention (see Table 3.1). To guarantee anonymity of participants, we identify the participants with a pseudonym, indicating their position and their sex.

Data analysis

In order to be able to explore the systemic gender knowledge of participants, and to explore possible shifts in this knowledge before and after the intervention, we interpreted participants' written answers to the open questionnaire before and after the interventions and visualized this interpretation into the kind of models shown earlier in Figure 3.1. Thus, we achieved a graphical representation of their answers, visualizing our interpretation of their knowledge at that moment of gender inequality processes. This conversion from text to model took two steps for each individual participant.

The first step concerned identifying processes and determining how they interacted. To this end, we identified processes from the answers to three questions in the questionnaire: (1) "What is, in your opinion, the key issue to be discussed?", (2) "What are, in your opinion, processes causing this issue to persist?" and (3) "What are, in your opinion, consequences of this issue?" We extracted the central problem from the answer to the first question. Next, we identified causal processes and their relations from the answers to the second question. We used textual markers, e.g. indicating juxtaposition ('and') and subordination ('because', 'which'), as indications on how these processes were related. We next extracted processes that were the effect of the central problem from the answer to the third question in the questionnaire. When relevant textual markers were present, we linked these to the processes already identified. Finally, we established feedback loops when the answers indicated an interaction between processes, either explicitly, or implicitly via phrases as 'ever more women', 'recurring effect', or 'something like a vicious circle'. This first step resulted in a graphical representation of the processes each participant identified, and of the way these processes were related to each other. When participants had identified interaction between processes, this was visualized in feedback loops. After this first step, we had a visualization of the processes and feedback loops which participants recognized before and after the intervention.

In step two, we examined what level the processes addressed: society, organization, or individual. For instance, we coded a process 'attractiveness for women' differently from a process identified as 'attracting women'. Though both processes seem to address the same issue, we coded 'attractiveness for women' as a process on the individual level, because it is about what women apparently do or do not find attractive; it is a process that explains behaviour from an individual perspective. We coded the process 'attracting women' as a process on the organizational level, because it is about what the research institute is capable of. This second step resulted in all processes in the models being coded according to their level of analysis and allowed us to specify to what extent the knowledge of participants showed endogenous thinking. Knowledge in which societal or individual processes are seen as unidirectional influencers of organizational processes shows less systemic gender knowledge than knowledge in which these societal or individual processes interact with organizational processes, as shown in model 1b of Figure 3.1.

After these two steps, 2 x 14 models gave information on the systemic gender knowledge emerging from the written questionnaires before and after the intervention. For each participant we explored the systemic gender knowledge emerging from the models we constructed from the written answers to the questionnaires before and after the intervention. This exploration also allowed a comparison between systemic gender knowledge before and after the intervention. An illustration of such a comparison is shown beneath.

Exploring systemic gender knowledge

To show how we constructed models from the answers to the questionnaires, we specify the analytical steps we took with the questionnaire of faculty member Patrick. Figure 3.2 gives the models we built in order to visualize the systemic gender knowledge that emerged from Patrick's answers to the questionnaires. The left model visualizes the systemic gender knowledge

before the intervention. Patrick formulated the central problem as: 'Attracting and retaining more female staff and students'. We translated this into the boxed-in process: 'Capacity to attract and retain women staff and students'. Patrick formulated the following causes for this problem: "Regarding inflow, image of the field. In addition, something like a vicious circle: few female employees, hence little appeal to students and possibly PhD-students, hence few female personnel, et cetera. A lone female student or employee can feel lost / a loner." We visualized this in the processes above the central problem, with the arrows indicating that these processes are causes for the central problem. Finally, Patrick formulated the following consequences of the problem: 'A missed opportunity in finding potential for the institute as well as for society; A different atmosphere in the research group when there are only men.' We visualized these processes below the boxed-in central problem, the arrows showing that these processes are consequences of the central problem.

The model on the right depicts the systemic gender knowledge after the intervention. Patrick now formulated the central problem as: 'The low proportion of women among staff & students'. We translated this into the boxed-in process 'Proportion of women staff & students'. Regarding the causes for this problem, Patrick wrote: 'Vicious circle of image of the field, attracting few female students, hence having few female staff, which has an effect on image & direction of the field.' We visualized this in the processes above the central problem, with the arrows indicating that these processes cause the central problem. Finally, after the intervention, Patrick formulated the following consequences of the problem: 'Not making use of the full potential of society; suboptimal atmosphere in the various research groups.' We visualized these processes below the boxed-in central problem, the arrows showing that these processes are consequences of the central problem.

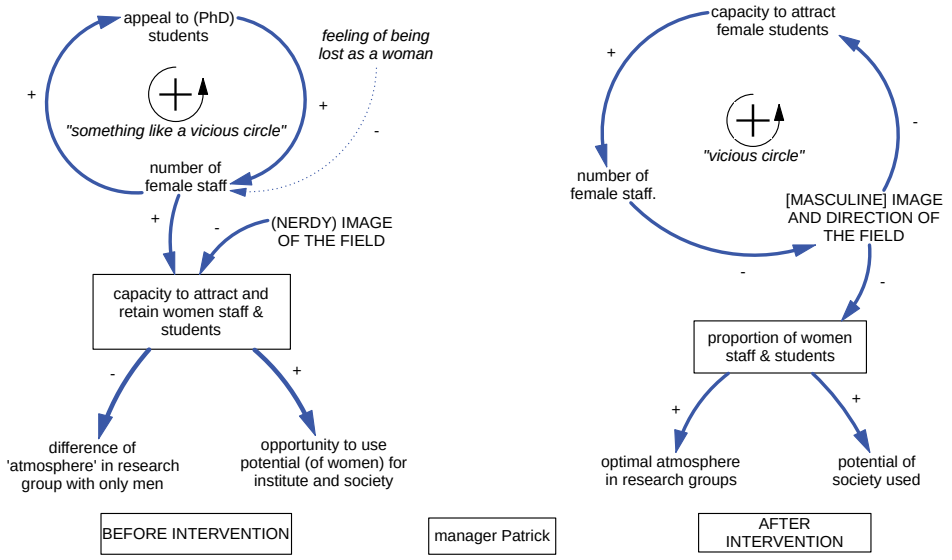

Figure 3.2. Modelling changes in systemic gender knowledge

Results

Knowledge on interacting processes

The first characteristic of systemic gender knowledge is knowledge on the interaction of gender inequality processes. This concerns knowledge of feedback loops, consisting of processes that relate to each other as both cause and consequence. We explored changes with individual participants, in order to get a feeling of variations on the individual level, acknowledging that 'a change in knowledge' is dependent on context, subtle and fluid. Changes in individuals' knowledge at any given moment – whether indicating an increase or a decrease – should be seen in this perspective. In addition, we summarized the findings on all fourteen participants, which required quantifying part of the qualitative material. Though we do realize that this means reduction, it supported us in comparing the changes in the characteristics of systemic gender knowledge on an aggregated level.

Participant Patrick (see Figure 3.2) described one feedback loop ('something like a vicious circle') before the intervention. After the intervention, he again described one feedback loop ('vicious circle'). So, concerning the first characteristic of systemic gender knowledge, knowledge on interacting processes, we see no change with this faculty member. Describing the issue as a vicious circle, Patrick was one of three participants who described the causes and consequences of gender inequality in terms of interacting processes before the intervention. The other two participants stated that "the issue has become a snowball" (faculty member Sidra), and that "there is a back reaction" (post doc Vicky). Most participants described only linear cause and effect relations before the intervention, summing up separate causes and separate consequences. Some participants did come close to 'closing the loop', connecting causes with consequences and vice versa. For instance, faculty member Hanna identified critical mass as one of the processes causing gender inequality: "Critical mass problem: if an institute has very few women, it is not an attractive environment for women to want to work." However, she identified the critical mass problem as a unidirectional cause for gender inequality at the institute, and only indirectly as a consequence as well. Thus, she did not explicitly close the feedback loop, and her analysis did not conform to the first characteristic of systemic gender knowledge. The same counts for faculty member Marian, who described a relation between six processes after the intervention, which formed a feedback loop but for one missing connection.

Concerning changes in thinking in interacting processes, one participant identified a single feedback loop before, and two feedback loops after the intervention. Two other participants were constant: they identified a feedback loop before, as well as after the intervention. Patrick was one of them, as we have already discussed. One other participant, manager Selma, showed an increase in thinking in interacting processes, by describing a feedback

loop after the intervention where she did not do so before the intervention. Transcripts of the discussion during the intervention support this change in Selma's knowledge. In a closing round at the end of the intervention, Selma was one of two participants who recognized explicitly that they increased their knowledge of the interaction of processes during the intervention. She said:

> *"The many-sidedness of the issues. […] If you see everything in one model, then you think, o yeah, no, there is quite something to be done. [..] For me at least I see them all together [for the first time], and you think, it indeed all has an impact on each other. Then you become more aware of the multitude actually."*

Aggregating all changes regarding the first characteristic of systemic gender knowledge, thinking in interacting processes, we find that the number of participants who showed this characteristic increased from three to four. The total number of feedback loops that these participants described, increased from three before, to five after the intervention. This slight increase aligns with reports in literature that people in general have difficulty in thinking in feedback processes, even when schooled in systems thinking (Richardson & Andersen, 2010).

Endogenous thinking

Endogenous thinking is the second characteristic of systemic gender knowledge. When the intervention aims at understanding how organizational processes (re)create gender inequality, endogenous thinking ensures a focus on dynamic behaviour of the organization. The interaction of societal or individual processes with organizational processes is recognized, and these processes are not seen as external causes of organizational processes. We

found some endogenous thinking with six participants.

Starting again with Patrick, the faculty member whose answers to the questionnaires we modelled in Figure 2, we found changes in endogenous thinking by comparing the models before and after the intervention (see Figure 3.2). First of all, before the intervention, Patrick mentioned a process on individual level as an external cause: *feeling of being lost as a woman*. After the intervention he did not mention this process. This is a decrease of focus on an individual process as external cause of gender inequality and thus an increase in endogenous thinking. Secondly, before the intervention he saw the societal process *(nerdy) image of the field* (displayed in capitals) as an external cause. After the intervention, he incorporated a similar societal process (also displayed in capitals) into the feedback loop, thus bringing it within the system of the organization. This indicates an increase in endogenous thinking.

We next present a discussion during the intervention to illustrate what deliberations and considerations preceded Patrick's increase in endogenous thinking. It concerns a fragment of a discussion that ranged for more than ten minutes on whether or not the institute could influence performance requirements in science. The discussion was intense, with participants frequently talking through one another. Junior faculty Sidra and manager Selma were most vocal in voicing the opinion that the institute could certainly influence science as a whole. However, Patrick and manager Victor explicitly disagreed. In the end, Victor conceded that, to the degree that internal male culture was influencing performance requirements, the organization had some control, but that the institute could not do anything about performance requirements "in science as a whole."

Turn	Participant	Quote
1	Victor	You won't succeed in changing performance requirements in science by appointing fewer male postdocs here.
2	Selma	No, but in this way you do sustain it, don't you? If you want to change something, you have to begin somewhere!
	[…]	
3	Victor	I wouldn't want to say that if I appoint more [female] postdocs, this will change performance requirements in science.
4	Sidra	But eventually it would, when all organizations would start doing that.
5	Victor	Yes, but that is not the point, it is about here. [Sidra and Selma both voice dissent]
6	Selma	There IS an interaction.
	[…]	
7	Victor	We, locally, cannot help much about the performance requirements, about the importance of the grant system
	[…]	
8	Sidra	If this change in proportion of men and women occurs in all institutes [in our field], the whole culture of the scientific field will change. So, the influence is there, even though you can't measure it, in case you would appoint a couple more female postdocs here.
9	Victor	Well, the part that we control ourselves, that depends on the male culture inside, […], but I think it is too much to say that we, here, can DO something about the performance requirements in science as a whole.

The negotiation revolved around the question: are performance requirements a cause of gender inequality in this organization that the organization cannot do anything about? This question exemplifies the core principle of endogenous thinking. When a model consists only of external causes pointing in a unidirectional way to gender inequality in the organization, the organization is a victim of these processes. Endogenous thinking offers two ways out of this. Either by incorporating external forces into the analysis, in such a way that the influence is bidirectional: society influencing the institute, and the institute, albeit perhaps in barely perceptible ways, influencing society. The second option is focusing on organizational processes, leaving societal and individual processes out. The negotiation above signifies that managers Patrick and Victor were reluctant to extend the boundaries of the analysis to include societal processes.

During the intervention, they preferred to restrict their analysis to organizational processes. However, after the intervention, Patrick did include the societal process ("[masculine] image and direction of the field") in his analysis of interacting organizational processes, indicating an increase in endogenous thinking.

Returning to other individual participants, in addition to Patrick, two participants showed an increase in endogenous thinking: Larry and Marian. Larry identified only unidirectional processes before the intervention. After the intervention he connected processes on the level of the organization ('outflow after MSc degree' and 'role models for female students') with societal processes ('impression that science is a man's issue' and 'number of women scientists'). Marian connected processes on all three levels after the intervention, which she had not done before the intervention.

One participant, Sidra, decreased in endogenous thinking. Before the intervention she said: "The issue has become a snowball. The less women there are, the worse the atmosphere becomes and the less attractive it is for women. […] working [here] is like entering the men's toilet by mistake and wanting to run as fast as possible." This answer connected processes on both organizational ('number of women', 'quality of atmosphere') and individual levels ('wish to run away'). After the intervention, Sidra still focused on the organization, but left the processes on the individual level out.

Two participants remained constant regarding the characteristic of endogenous thinking in systemic gender knowledge: they pointed out both before and after the intervention that organizational and societal and/or individual processes were interacting.

Zooming out to all participants on an aggregate level, comparing the models before and after the intervention, we saw a shift in focus. The number of organizational processes that were identified increased from 66 before to 79 after the intervention, while the number of societal or individual processes decreased from 49 to 43. This illustrates that participants focused more on organizational

processes as the relevant level of analysis after the intervention.

Concluding, the first characteristic of systemic gender knowledge, knowledge of interacting processes, translates in small changes in systemic gender knowledge of individual participants to the intervention. Regarding the second characteristic of systemic gender knowledge, endogenous thinking, we also saw some shifts, generally towards more endogenous thinking. We conclude that in the interventions of our case study, the actual increase in systemic gender knowledge was visible, although modest. These minor changes indicate that we succeeded in visualizing systemic gender knowledge.

Conclusion and discussion

This chapter aimed to explore what gender knowledge participants to gender equality interventions need to understand, engage in and/or support transformational change towards gender equality. We contributed to the literature on gender equality interventions (Benschop et al., 2015; Benschop & Van den Brink, 2014; Bird, 2011; Britton & Logan, 2008; Bustelo et al., 2016) in three ways. We introduced the concept of systemic gender knowledge and detailed two characteristics of this knowledge; we developed an analytical tool to explore this systemic gender knowledge; and we empirically explored the systemic gender knowledge of participants to two gender equality interventions.

The first contribution of this study is the notion of systemic gender knowledge as a key condition for successful gender equality interventions. We defined systemic gender knowledge as an endogenous view on interacting processes (re)producing gender inequality, consisting of two main characteristics: knowledge on interacting processes and endogenous thinking. These characteristics enabled us to describe what it is that makes gender knowledge systemic, a conceptualization that hitherto is not explicitly formulated in literature on gender equality interventions.

With our conceptualization of systemic gender knowledge, we contribute to the literature that argues that organization members need knowledge of gendered processes and practices to effectively support transformational change (Bird, 2011; Bustelo et al., 2016; Lombardo & Mergaert, 2016). In addition, we add a normative perspective to the concept of gender knowledge as a tool to explore what epistemologies underpin persons' understanding of gender, and how different ideas about gender compete (Cavaghan, 2013, 2017b). Building on Acker's pioneering framework of gendered organizations, in which she identifies the relevant sets of processes as structure, culture, interaction, identity and organizational logic (1990), our introduction of systemic gender knowledge has allowed us to further elaborate how these different processes interact. We further underpin Acker's recognition of the importance of endogenous thinking and the linkages between societal, organizational and individual processes (Acker 2006a).

The second contribution is methodological, as we reconstructed graphical representations of participants' systemic gender knowledge, to be able to explore changes in this knowledge. By detailing how to translate verbal information into graphical language, we extend the borders of qualitative content analysis. We have shown that the integration of participatory system dynamics with qualitative content analysis allows a detailed exploration of systemic gender knowledge.

The third contribution of this study is empirical. Our exploration of changes in the systemic gender knowledge of participants in gender equality interventions showed modest increases. Thus, our case study has shown that a gender equality intervention aiming at systemic thinking can lead to small increases in systemic gender knowledge. The concept of systemic gender knowledge is therefore a viable and identifiable goal for such interventions when knowledge production is key. This adds to the efficacy of transformational change intervention goals, which are as yet quite vague, as we saw for instance in the EIGE transformational toolkit (EIGE, 2016). The concept of systemic gender knowledge enables researching whether the knowledge presented in these interventions is able to

support transformational change. When, for instance, an intervention only targets interaction processes between individuals, we know the knowledge presented is not systemic.

We acknowledge that cognitive knowledge is at most a necessary and certainly not a sufficient condition for transformational change (Bleijenbergh, 2018). Further research is needed to examine whether the increase of systemic gender knowledge enables participants to gender equality interventions to take further steps on the path of transformational change. What is, for instance, needed to contribute to the translation of ideas into action? Eriksson-Zetterquist and Renemark (2016) recently argued that such translation is necessary for sustainable change, using translation theory in their comparison of two gender equality intervention programs. They concluded that not a top-down approach, but rather a localized approach involving all levels of the organization, contributes to the translation of ideas into action. This connects with the bifocal approach of De Vries and Van den Brink (2016), who stress the importance of the development of individuals as a strategy in transformational change efforts. Increasing the systemic gender knowledge of individuals might then be considered a strategy in transformational change. We can very well imagine that participatory system dynamics is exactly the kind of localized bottom-up approach, empowering participants, that is needed for translation of ideas into action. Further research on this idea is however necessary.

Chapter 4

Negotiating gender knowledge: Power dynamics in gender equality interventions

This chapter[1] aims to increase insights in power dynamics that are central to gender equality interventions by examining negotiations on contested gender knowledge. By analysing micro-level negotiations in three gender equality interventions in academia, the research identified several negotiation patterns: indifferent, antagonistic, blocking, constructive and reconstructive. These negotiation patterns resulted in continuing hegemonic gender knowledge, contested gender knowledge, and new gender knowledge. New gender knowledge is developed when three key conditions are realized in the intervention. First, the emotional engagement of participants is crucial to arrive at new gender knowledge. The second condition is the possibility to reopen negotiations on the same topic during an intervention. The third condition is the participation of a gender expert with sufficient seniority to defend new knowledge. The chapter adds to gender equality change literature in showing how emotional engagement of participants materializes in negotiations, how extended negotiations support new gender knowledge generation, and how authority of experts supports the generation of new knowledge within groups. The research informs the design of gender equality interventions with three recommendations that follow from these conditions.

[1] This chapter is based on a paper in the first round of review: Lansu, M., Arensbergen, P. van, Bleijenbergh, I., Benschop, Y. Negotiating gender knowledge: Power dynamics in gender interventions. *Journal of Organizational Change Management*. An earlier version of this chapter was presented at the International Doctorate Consortium in Finland, 2017.

Introduction

This chapter contributes to the literature on gender equality interventions, opening the black box of power dynamics during these interventions, by researching negotiations on gender knowledge. Scholars agree that it is vital that participants to gender equality interventions increase their knowledge on how organizational processes (re)create gender inequality (Bird, 2011; Bleijenbergh & Van Engen, 2015; Bustelo et al., 2016; Ely & Meyerson, 2000b). However, gender knowledge generation, in particular the transfer of knowledge about gender inequality processes to participants in interventions, is difficult (Bird, 2011; Goltz & Sotirin, 2014; Heiskanen et al., 2015; Lombardo & Mergaert, 2013; Mergaert & Lombardo, 2014; Van den Brink, 2015). In gender knowledge generation, power dynamics are said to play an important role (Ferree & Verloo, 2016). However, detailed insights in how power dynamics work in gender knowledge generation, with which the design of effective gender equality interventions can be supported, are scarce (Bustelo et al., 2016).

The chapter aims to increase insights in power dynamics by researching negotiations on gender knowledge. This research draws on organizational becoming literature which argues that organizational change is a continuous process of discursively co-creating new meanings (Tsoukas, 2005, 2009; Tsoukas & Chia, 2002). Organizational change is achieved in negotiations between actors with contested opinions and interests (Grant, Michelson, Oswick, & Wailes, 2005; Kemp, Keenan, & Gronow, 2010; Mumby & Stohl, 1991). Thus, negotiations on gender knowledge are crucial to organizational change towards gender equality. The chapter researches how power dynamics influence gender knowledge by conducting a micro-level analysis of the negotiations held by participants to three gender equality interventions in the natural science faculty of a Dutch university.

Power dynamics

Knowledge work in gender equality interventions

Literature on gender equality interventions argues that organizations need to structurally transform the way they work in order to increase gender equality (Calás et al., 2014; Ely & Meyerson, 2000b). From this argument, it follows that interventions towards gender equality should involve stakeholders and increase their knowledge on how organizational processes (re)create gender inequality (Bird, 2011; Bleijenbergh & Van Engen, 2015; Bustelo et al., 2016; Ely & Meyerson, 2000b). Thus, gender equality interventions aiming at structural change need to perform "knowledge work": creating awareness with stakeholders, helping them see how gender inequality is systemic, enabling them to devise new policies and practices that do not reproduce inequalities (Ferree & Verloo, 2016). However, gender knowledge generation is a political and contested process (Bustelo et al., 2016; Ferree & Verloo, 2016). In this process, power tends to preserve hegemonic gender knowledge: dominant, non-systemic, gender knowledge (Cavaghan, 2013; Heiskanen et al., 2015), as stakeholders in positions of power "continue to embrace women-centered explanations for gender disparities" (Bird, 2011, p. 202). And when the burden of change is on women, organizations think they have no need for change (Britton, 2000; Calás et al., 2014). An example of politically contested knowledge concerns hiring and selection procedures: the non-transparency of these procedures is a gendered structure that is easily seen as unavoidable and unrelated to gender (Bird, 2011, p. 221). Thus, power dynamics will work towards keeping hiring and selection procedures as they are: vague and opaque. The question is whether this is also the case in 'democratic' gender equality interventions, wanting to create a space in which power differences between participants are mitigated (Bird, 2011; Bleijenbergh & Van Engen, 2015; Heiskanen et al., 2015). However, literature on these interventions has hitherto not zoomed in on actual power dynamics.

Knowledge negotiations

Organizational becoming literature (Tsoukas, 2005; Tsoukas & Chia, 2002) informs this research of power dynamics in gender equality interventions. This literature considers organizational change as a continuous process, initiated and executed in dialogue between organizational actors. In this view, "organizational change is the process of constructing and sharing new meanings and interpretations of organizational activities" (Tsoukas, 2005, p. 98). Change is the result of people talking about and destabilizing the meaning of practical activities and agreeing on new interpretations of these activities (Ibid., p. 102). New meanings have to be negotiated (Mumby & Stohl, 1991) between actors with different views and interests (Grant et al., 2005), making organizations "sites of discursive struggle where different groups compete to shape organizational realities" (Kemp et al., 2010, p. 579). Thus, negotiations on contested gender knowledge determine what knowledge counts, and what knowledge is discarded (Alvesson & Kärreman, 2001; Grant et al., 2005). Knowledge generation supporting organizational change requires knowledge to be rendered in a form that allows it to travel throughout the organization (Cavaghan, 2013; Hardy & Thomas, 2014). It is even argued that when new knowledge is formalized to some extent, it is already evidence of organizational change. In that case, a change occurs in 'a first-order reality' (Ford, 1999, p. 487). An example of such a first-order reality might be a formal report containing new gender knowledge.

This chapter brings together insights from the literatures on organizational becoming and gender equality interventions to answer the research question how power dynamics influence gender knowledge. The chapter focuses on negotiations around transparent hiring and promotion procedures during gender equality interventions in academia, as the transparency of these procedures is an example of contested gender knowledge (Bird, 2011).

Methodology

A case study design was chosen as it allows analysis of rich material (Yin, 2013). The case study concerned three gender equality interventions in as many research institutes of a Dutch university science faculty: Institute for Matter, Institute for Binaries and Institute for Spaces. The top management of this science faculty was committed to participate in the gender equality interventions, because the faculty struggled with an enduring numerical imbalance in men and women scientific staff. With 66% of PhD students, and 92% percent of full professors in 2014 being men, the proportion of men was well above Dutch averages in academia, with 56% male PhD students and 83% male full professors (LNVH, 2015[2]). In addition, this situation hardly changed over time. The interventions in the research institutes took place in 2014 and 2015.

The intervention strategy

The chapter examines power dynamics in gender equality interventions which applied the method of group model building. This is an intervention for group learning (Vennix, 1996), based on systems thinking (Forrester, 1987). A facilitator supports participants in the analysis of a complex problem, resulting in a causal model that visualizes the systemic processes creating this problem. Group model building is specifically designed to help solve 'messy' problems, in which different perspectives and values of participants lead to disagreement on the problem definition and analysis (Vennix, 1996, 1999). Group model building was chosen as a gender equality intervention, as gender inequality in organizations typically qualifies as a 'messy' problem (Bleijenbergh, Benschop, et al., 2013): Participants have different opinions on causes and consequences, on goals and methods, and even on the question whether gender inequality is a problem at all (Benschop & Verloo, 2006; Heiskanen et al., 2015). In addition, studies indicate that group

[2] LNVH (Dutch Network of Women Professors), 2015. Monitor Vrouwelijke Hoogleraren. http://www.lnvh.nl

model building can be used as a method to develop participants' knowledge on gender inequality processes (Bleijenbergh, Benschop, et al., 2013; Bleijenbergh & Van Engen, 2015), in other words, to develop new meanings. The design of group model building is geared towards negotiations: It aims to give participants with different interests and perspectives equal opportunity to introduce, discuss, and reject or accept concepts (Rouwette, 2011). Acknowledging, and working with the differences between participants is one of the core principles of group model building (Ackermann & Eden, 2011). The general premise is that group model building is a 'democratic' intervention, serving to mitigate power differences between participants (Van Nistelrooij et al., 2012; Vennix, 1996).

The gender equality interventions

The purpose of the interventions was to create gender awareness amongst participants, construct a joint analysis of processes (re)creating gender inequality in the research institute, identify levers for policy change, and transfer problem ownership. Participants were personally invited by their scientific director, so participation was voluntary though not completely optional. The participants consisted of a broad array of staff: from scientific director to junior researchers in temporary positions. The gender composition overall in all three groups was balanced (five or six men, and six or seven women). However, in line with the overrepresentation of women in precarious positions in the faculty as a whole, there was vertical segregation, with all temporary staff and tenure track researchers being women. A female gender researcher of the same university participated in each group. I was supported by fellow researchers in the facilitation of the interventions.

In general, group model building takes several sessions with stakeholders, planned some weeks apart. Group model building facilitators work with a choice of standardized scripts (Hovmand et al., 2012), first visualizing the problem that the group is aiming to understand. Next, they support the group in making an

inventory of possible causes and consequences of this problem. Subsequently, they facilitate the actual building of the causal model, inserting variables in the model one by one, dependent upon consensus from all participants on their meaning and explanatory value. Finally, the group identifies levers for policy change from the model. After the intervention, the facilitators write a draft report with the results – the causal model and the levers for change – which is finalized after incorporating participants' remarks. The gender equality interventions in the case study followed this script. The intervention in each institute consisted of two or three sessions, totalling 8 to 10 hours of group model building.

Data collection, coding and analysis

The data set consists of (a) the written draft and final reports of the interventions; and (b) verbatim transcriptions of the audio taped interventions (26 hours in total). The transcription followed transcription rules that focus on content (Kuckartz et al., 2008). Qualitative content analysis was applied (Boeije, 2009), to select and code the research data. Going through the material iteratively, first all talk turns concerning the negotiation on hiring/promotion policies were selected, using codes such as: 'hiring and/or promotion policies', 'clear guidelines for promotion', 'transparency of hiring'. To analyse power dynamics, the research drew on the work from Thomas et al. (2011), who identified communicative practices as building blocks of negotiations. Their micro-level content analyses of negotiations in interventions were used as an operationalisation of power dynamics. Their framework was adapted in iterative steps, going from the research data to their list, and vice versa. This abductive process resulted in a list of twelve different communicative practices, which were divided into four negotiation practices: Exerting *authority*, displaying *opposition*, engaging *query* and sustaining *relations* (see Table 4.1). These four negotiation practices were used as the main level of analysis.

Table 4.1. Negotiation practices, consisting of communicative practices (adapted from Thomas et al. (2011))

	Description
Negotiation practice: exerting authority	
Dismissing	Statements that serve to rebuff or ignore alternative meanings proposed by other actors
Reifying	Statements that invoke concepts, processes or models to represent a particular, non-negotiable meaning
Deploying expertise	Statements that refer to superior knowledge or expertise to justify the legitimacy of a proposed meaning
Negotiation practice: displaying opposition	
Challenging	Statements that reject or critique alternative meanings proposed by other actors
Siding with	Supporting a challenge, fuelling the opposition
Holding to account	Statements that demand action from other actors (or question a lack of action) to undermine or discredit their proposed meanings
Negotiation practice: engaging query	
Proposing	Statements that introduce a new meaning or a new subject
Clarifying	Questions that open up negotiations of meaning
Building	Statements that engage with, elaborate, and develop alternative meanings proposed by other actors
Negotiation practice: sustaining relations	
Affirming	Statements that agree with alternative meanings proposed by other actors
Reiterating	Statements that return to and repeat meanings
Facilitator communication	Inviting participants to join or start the negotiation; Summarizing; Checking participants' consensus or dissent; Closing the discussion in order to move on to the next topic

Results

To answer the research question how power dynamics influence gender knowledge, this chapter first examines what gender knowledge results from negotiations on gender knowledge, and next what negotiations patterns are underlying these gender knowledge results.

Negotiation results

The negotiations on transparent hiring or promotion procedures in the

research institutes of the case study took place in several discrete negotiation episodes. The research found that each negotiation episode in the gender equality interventions gave one of three different results: continuing hegemonic gender knowledge, contested gender knowledge, and new gender knowledge. However, as long as negotiations can be reopened, the result of a negotiation episode is temporary. Gender knowledge is only 'final' at the end of the gender equality intervention, when negotiation results are formalized in a report.

Continuing hegemonic gender knowledge

The first result of negotiating gender knowledge, continuing hegemonic gender knowledge, emerges when negotiations do not challenge hegemonic knowledge, and do not lead to changes in the analysis of gender equality processes. This result is found in the Institute for Matter. In this institute, participants discussed transparency of hiring procedures in two separate episodes, one in the first session, and one – with partly different participants – in the second session. The new gender knowledge at stake in these negotiation episodes is that transparent hiring procedures are important to counter recruitment bias. The hegemonic gender knowledge is that hiring procedures are not gendered. A relevant fragment of the discussion in the second session is presented in Episode 1, in which facilitator Marian invites participants to discuss the transparency of hiring procedures. The participants in the ensuing discussion are managers Edward and Berdine, senior faculty member Fay, and gender expert Lea.

Of key relevance in this episode is the way how participants react with indifference to facilitator Marian, who proposes the topic twice (turns 1 and 5), to gender expert Lea, and to manager Felix (turns 7 and 9). Participants repeatedly try to change the topic (turns 4 and 10 respectively). It is second facilitator Paula who finalizes the negotiation episode on transparent hiring procedures by asking whether the proposed place in the model is okay (turn

11). She gets nodded assents, so there is apparent consensus on new gender knowledge. However, later on in the intervention, the topic is incorporated in the more general topic of 'gender sensitive recruitment', and is thus rendered invisible. Hegemonic gender knowledge is continued.

Episode 1. Fragment of negotiation resulting in continuation of hegemonic gender knowledge

Turn	Ppn	Quote	Negotiation practice
1	Marian	And the transparent hiring procedures… Last time this did not end up in the model, but now the suggestion is to give it a place.	Relations
2	Edward	[…] Is this something that specifically will help in gender issues, so to speak?	Query
3	Fay	Yes	Relations
	Berdine	Yes.	Relations
4	Berdine	Even if you would hire anonymously, you would also solve a lot already […]	Query
5	Marian	Lea, I think this has been amply researched, the transparency of hiring procedures?	Relations
6	Lea	Yes, yes. […] transparency ensures that people have to be clear about what steps they have taken, what criteria are used in employing someone, and to make that as transparent as possible, to counter recruitment bias.	Relations Authority
7	Edward	I understand that. [...]. Of course, if there are not enough women, then a lot of women think everything will be fixed and they don't need to apply. Is that what you are saying?	Relations Query Query
8	Lea	Yes	Relations
9	Edward	If you just say: this is how we are doing this, and everybody has an honest chance…	Query
10	Fay	[Let's look at] information on Work/Life balances	Query
	Several voices	Work Life Balances. Yes, they are here	Relations
11	Paula	But this one [meaning transparent hiring procedures] is agreed upon?	Relations

Contested gender knowledge

The second result, contested gender knowledge, emerges when both hegemonic and new gender knowledge are discussed, but participants cannot reach agreement on a joint analysis. The contested gender knowledge that is the

subject of the negotiation, is still contested at the end of the negotiation episode. This result is found in the Institute for Binaries, and a relevant fragment of the negotiation is presented in Episode 2. In this institute, the transparency of promotion criteria inspires one of the lengthiest discussions on any topic during the intervention. The new gender knowledge central to the negotiation is that transparent promotion criteria are important to the careers of women (more so than to the careers of men). The hegemonic gender knowledge that also emerges, presents promotion criteria as gender neutral and necessarily vague. In the fragment below (Episode 2), full professor Felix first contests that the criteria are vague, and next asserts that this cannot be helped. He is supported in this assertion by manager Henry. Faculty members Stacey and Bibiana, joined by manager Silke, oppose Felix and Henry, asserting that criteria are vague and that this is problematic.

Episode 2. Fragment of negotiation resulting in contested gender knowledge

Turn	Ppt	Quote	Negotiation practice
1	Felix	I have the impression that the criteria are relatively clear.	Opposition
2	Stacey Bibiana Stacey	Where do you think these criteria are documented? Where are they documented? I am curious: where are those criteria?	Opposition
3	Silke	What is the difference between an assistant and an associate professor? […] And between an associate and a full professor? Do you need a minimal H-index to become an associate professor?	Opposition
4	Felix	No, of course not, that is a nonsensical criterion But the UFO-criteria, they give…	Authority Authority
5	Silke	Are they transparent and precise? Go take a look?!	Opposition
6	Henry	No, they are quite vague, yes	Relations
7	Bibiana	Exactly!	Authority
8	Stacey	And that is the problem!	Opposition
9	Henry Felix Henry	But it cannot be done differently [at the same time] Yes, but it CANNOT be done differently It cannot be done differently, you wouldn't want it differently, but…	Authority
10	Felix	I mean, it would be RIDICULOUS if we would start saying like, when you have a H-index of 35…	Authority

What stand outs most in this negotiation episode, is that participants confront each other heads on. The atmosphere is clearly antagonistic. When manager Henry is forced to concede a point (turn 6), and Stacey and Bibiana claim victory (turns 7 and 8), Henry and Felix retreat to the next line of defence (turns 9 and 10). The negotiation ends only when the facilitator eventually stops the discussion. No agreement is reached: the result is contested gender knowledge.

New gender knowledge

The third result, new gender knowledge, emerges when a negotiation episode ends when the group agrees on new gender knowledge, for instance that transparent promotion criteria support women's careers in particular, and formalizes this in the model and later in the written report of the intervention. This result is found in two of the institutes. The chapter first presents a fragment of a negotiation leading to new gender knowledge in the Institute for Spaces (Episode 3). Here, the gender-neutral interpretation of the informal hiring of temporary staff is successfully problematized in three negotiation episodes, promoting the new gender knowledge that informal procedures disadvantage women. However, when it comes to translating theory to action, fierce resistance emerges. The negotiation fragment concerns the third episode, in which full professor Louisa protects her interests (individual freedom in deciding who to hire as temporary staff). Gender expert Karen, and facilitators Britt and Lauren argue for a formal hiring procedure involving a selection committee.

Episode 3. Fragment of negotiation resulting in new gender knowledge

Turn	Ppt	Quote	Negotiation practice
1	Louisa	Do I do it by myself? Yes, if it is the position of a project, I obtained a grant for, yes, I do it all by myself. Yes.	Authority
		[…]	
2	Britt	But formalizing does not mean that you can't decide on who to hire. It's more like reporting, …	Opposition
3	Louisa	[Interrupting Britt] Yeah, but you're talking about having a [selection] COMMITTEE, the committee should look at it, and you should justify in front of the committee, you will have to write a REPORT. This is all extra work for me!	Query Authority
		[…]	
4	Karen	[over several other persons] But it's a report that is written in like, 15 minutes. It's not, it's like half a A4.	Query
		[…]	
7	Louisa	Well, it is problematic to implement, because of the way the money comes in.	Authority
		[…]	
8	Lauren	But it is something you can talk about, not formalizing who you choose, but formalizing the process. Which doesn't diminish the freedom of CHOICE.	Query
9	Louisa	So, sorry, just, at the end of this process, I would have to write down: so many people, you know, advertised in this way, so many people applied, out of whom there were so many women and I chose person X.	Query
10	Lauren	Yeah. That would be too much?	Query
11	Louisa	No, that's not too much. […]	Relations

Crucial in this negotiation episode is how the assertions of full professor Louisa (turns 1, 3 and 7), are not answered in kind. After a first challenge (turn 2), gender expert Karen and facilitators Britt and Lauren carefully explore possibilities. The idea of a selection committee clearly is too much for Louisa (turn 3), but writing a short report appears to be negotiable. The result of this negotiation is that Louisa agrees to a suggestion on how to implement a more transparent process of hiring temporary staff (turn 9 and 10). This suggestion is included in the model and confirmed in the written report.

The second negotiation episode resulting in new gender knowledge is found

in the Institute for Binaries. Here, three previous negotiation episodes on the transparency of promotion procedures resulted in contested gender knowledge (an example was given in Episode 2). However, a fourth episode does result in a change in the knowledge, which is formalized in the written report: Transparent promotion criteria support women's careers. Thus, the negotiation on transparent promotion procedures in the Institute for Binaries evolves over several episodes, and finally results in new gender knowledge.

Negotiation patterns

The research found that four negotiation practices – exerting authority, displaying opposition, engaging query and sustaining relations, see Table 4.1 – interacted in different ways during gender equality interventions, producing five negotiation patterns.

The first negotiation pattern is *indifference*. This pattern consists almost exclusively of the negotiation practice of sustaining relations. This pattern is found in the Institute for Matter, where it results in continuation of hegemonic gender knowledge. Episode 1, above, exemplifies this pattern. When gender expert Lea and facilitator Marian, both temporary staff in their own faculty, introduce new gender knowledge, the other participants react with indifference, refraining from exerting authority or displaying opposition. Lea and Marian do not succeed in engaging participants. On the contrary, participants seem eager to change the discussion topic. This pattern results in the continuation of hegemonic gender knowledge.

The second negotiation pattern is *antagonistic*. This pattern is found in the case material when exerting authority and displaying opposition are clashing. The pattern of displaying opposition and exerting authority grows into a negotiation in which two groups are vehemently disagreeing with each other. An example of this antagonistic pattern of gender knowledge negotiation is the negotiation fragment in the Institute for Binaries in Episode 2. This second pattern also results in the continuation of hegemonic gender knowledge.

The third pattern is *blocking*. This pattern emerges when participants answer the negotiation practice of engaging query with exerting authority and displaying opposition. This pattern is found in the Institute for Binaries, when some participants repeatedly suggest new gender knowledge concerning transparency of promotion procedures. Time and again other participants block these suggestions, displaying opposition and exerting authority. The suggestion that women might have to wait longer than men for tenure because of unclear procedures, for instance, is met with the challenge that men suffer as well. This chapter concludes that the pattern in this negotiation episode blocks the introduction of new gender knowledge, thus resulting in the continuation of hegemonic gender knowledge. However, the blocking pattern is also found in the Institute for Spaces, where it serves to save new gender knowledge. In this institute, in three negotiation episodes, the topic of informal recruitment threatens to be dismissed. Its dismissal is blocked by exerting authority, twice by gender expert Karen, and once by facilitator Britt. Both Karen and Britt are associate professors outside the science faculty. The topic remains on the table. In this negotiation episode, the pattern blocks the dismissal of new gender knowledge, enabling new gender knowledge to remain a topic of negotiation.

The fourth pattern is *constructive*, emerging when participants consistently oppose authority, and react with engaging query. This pattern steers clear from an antagonistic and blocking pattern, because participants do not accept exerting authority at face value, but instead query the propositions that are made. The negotiation in Episode 3, in the Institute for Spaces, is an example of this pattern. The result is a negotiation in which the interests and convictions of negotiation participants become clear, and a compromise is possible. This constructive pattern of gender knowledge negotiation results in new gender knowledge.

The fifth and final pattern is *reconstructive*, consisting of negotiation practices of sustaining relations. This pattern is found in the Institute for Binaries, in a negotiation episode in which participants reiterate arguments from the previous

negotiation episodes on the same topic, that were antagonistic (see Episode 2), and blocking. Now, participants don't exert authority or display opposition, but predominantly sustain relations. When the group members seem to have reached consensus, the facilitator rounds up by explicitly checking whether everybody agrees that transparent promotion procedures help women – more than men – to advance in their careers. Everybody agrees, and the analysis is adapted. This negotiation seemed to benefit from the previous antagonistic and blocking negotiation episodes. Opposition and authority can thus (initially) block new gender knowledge, but reconstructive negotiations can make amends, and result in new gender knowledge.

This chapter concludes that antagonistic and blocking negotiation patterns result in contested gender knowledge. However, as negotiations are ongoing processes, the final negotiation pattern in an intervention decides if and what gender knowledge is formalized in the model and confirmed by participants in the written report. In addition, only the indifferent pattern does not in any way lead to new gender knowledge. Therefore, the chapter also concludes that a certain degree of engagement with the topic, visible in exerting authority and displaying opposition, is necessary for new gender knowledge to emerge. Finally, the chapter concludes that the exertion of authority requires seniority: temporary staff members did not succeed to engage participants by exerting authority. Only participants in senior positions used authority successfully.

Discussion

This chapter researched power dynamics between participants in gender equality interventions by focusing on negotiations on gender knowledge. The research contributes to the literature on gender equality interventions, opening the black box of power dynamics in gender knowledge negotiations. Three key conditions

for new gender knowledge have emerged. First, the chapter shows how emotional engagement with a topic influences the generation of new gender knowledge. As different participants have different interests (Ackermann & Eden, 2011; Grant et al., 2005; Thomas et al., 2011), a negotiation is an opportunity to defend or further these interests, whether they concern expert opinions or the way a procedure is handled. We found that a certain amount of resistance, in the use of negotiation practices exerting authority or displaying opposition, appears to be paramount in negotiating new gender knowledge. It enables experiences, emotions and values to be formulated, discussed and explored. Thus, the negotiation can enrich other participants' understanding of the topic under discussion. These empirical findings concur with conclusions in Spee and Jarzabkowski (2017, p. 174) that "resistance arising from strongly vested interests can be productive in gaining acceptance of an initiative". The findings also support literature arguing that resistance can be a productive tool, opening up a debate regarding core values (Van den Brink & Benschop, 2017). So, the first condition for new gender knowledge to emerge is emotional engagement in a topic.

The second condition concerns the possibility of reopening negotiations. The chapter shows how the design of gender equality interventions supports the generation of new gender knowledge. When an intervention allows continuation or reopening of negotiations, for instance because prior results are validated in consecutive meetings, it offers opportunities to switch between negotiation patterns. Thus, a negotiation can be finalized with a constructive or reconstructive episode, resulting in new gender knowledge. Further research is needed, for instance on what consensus on new gender knowledge implies: it might well qualify as a 'joint account', accommodating multiple, coexisting meanings (Spee & Jarzabkowski, 2017).

The third condition concerns seniority of gender experts. The research found that group model building enables the use of a broad array of communicative practices that support negotiations resulting in new gender knowledge. This finding

supports claims in group model building theory that the method contributes to the building of shared new knowledge (Scholz, Austermann, Kaldrack, & Pahl-Wostl, 2015). However, the research also found that positional power is relevant in group model building interventions: seniority is related to the successful use of communicative practices exerting authority. This not only works to block new knowledge, as for instance Rouwette and Smeets (2016) argued, but also to defend new gender knowledge. The participation of gender experts and facilitators with sufficient seniority is therefore instrumental in increasing systemic gender knowledge of participants, keeping important gendered processes in the analysis. The suggestion that participants can avoid negotiation, as group model building offers "ample room to avoid the real thorny issues that may endanger future cooperation between the participants in the sessions" (Rouwette & Smeets, 2016, p. 142), needs further research.

Finally, on a more practical level, three recommendations on effective gender equality interventions can be distilled from this research: involve a senior gender expert who has enough clout to pursue and make a point, make sure that the intervention design allows negotiations to be reopened, and create space for emotional engagement. In the words of the founder of group model building: "the group facilitator will have to try to find an optimal level of group conflict" (Vennix, 1996, p. 170).

Chapter 5

Just talking? Middle managers negotiating problem ownership in gender equality interventions

Problem ownership of middle managers in gender equality interventions is assumed to be important, but is hitherto neglected in research. This chapter[1] *conceptualizes problem ownership as a two-step notion in which acknowledging responsibility precedes the willingness to take action. Drawing on literatures about resistance to gender equality interventions, and on resistance as productive of change, the research explored problem ownership of middle managers in three gender equality interventions in academia. The authors showed that there is a complex layering to problem ownership concerning personal and group responsibility and action. The authors conclude that a participatory intervention that creates a semi-public and non-optional space for negotiations on problem ownership cuts off some of the usual reasons for resistance of middle managers.*

[1] This chapter is based on the previous version of a paper which is currently in the third round of review: Lansu, M., Bleijenbergh, I., Benschop, Y. Just talking? Middle managers negotiating problem ownership in gender equality interventions. *Scandinavian Journal of Management*. Previous versions of this chapter were presented at the IMR research day in Nijmegen, and the Gender, Work and Organization conference at Keele University, UK, both in 2016.

Introduction

This chapter contributes to the debate on gender equality interventions, which continue to have limited success in creating transformational change (Husu, 2013; Kalev, Dobbin, & Kelly, 2006). We focus on the role of managers in gender equality interventions, as their role is deemed crucial to the success of interventions: managers need to initiate and support change efforts (Acker, 2000; Kelan & Wratil, 2017; Mattis, 2001; Powell et al., 2017), they are the gatekeepers controlling necessary resources (Connell, 2005), and can be effective champions of gender equality change (De Vries, 2015). When describing the vital role of managers to gender equality change, scholars generally, though often implicitly, refer to top managers, such as chief executive officers. When they do explicitly differentiate between top and middle managers, scholars argue that one of the key roles of top managers is to get middle managers 'own' the change: getting middle managers lead the change that the top has initiated (Kelan & Wratil, 2017; Mattis, 2001), having middle managers take responsibility and act (Mattis, 2001; McRoy & Gibbs, 2009). This ownership as a key goal of gender equality interventions is under researched, both conceptually as well as concerning actual processes of transferring problem ownership to middle managers. With this chapter we aim to contribute to both research gaps. Our research aims to add to insights in gender equality interventions by conceptualizing problem ownership and by conducting systematic micro-level explorations on problem ownership of middle managers.

After formulating a preliminary conceptualization of problem ownership as consisting of both responsibility and action, we turn to literature on resistance to gain insights in the transfer of problem ownership (Bergqvist, Bjarnegård, & Zetterberg, 2013; Lombardo & Mergaert, 2013; Powell et al., 2017). As this literature is silent on exactly how resistance to problem ownership materializes in interventions, and – more importantly – whether this resistance can be something

else than detrimental to change, we discuss the literature that identifies resistance as a way of negotiating new meanings and organizational practices (Mumby, 2005; Spee & Jarzabkowski, 2017; Thomas & Davies, 2005a; Tsoukas, 2005; Tsoukas & Chia, 2002). By enabling an open debate on hegemonic and implicit norms and values, resistance might enable change towards gender equality (Van den Brink & Benschop, 2017).

Our empirical research is based on case studies of gender equality interventions in three research institutes of a Dutch science faculty. We examined how middle managers negotiate their problem ownership in a participatory intervention for gender equality. After describing both the research methods as well as the intervention we used, we present our findings. We end with a reflection on the contributions of our research to literature on gender equality interventions.

Theoretical Framework

The role of managers in gender equality interventions

Research on the role of leadership in gender equality interventions is scarce (Benschop & van den Brink, 2018), in particular on the role of middle managers (Kelan & Wratil, 2017). Literature does purport that the involvement of managers is necessary to achieve gender equality change. Managers are the gatekeepers to gender equality change, opening their organizations for gender equality interventions (De Vries, 2015; Meyerson & Kolb, 2000). With their "long-established authority", managers are essential in providing legitimacy to the intervention (Acker, 2000, p. 626). They have the position to determine strategic directions, disrupt gendered routines and practices, control resources, change cultures and engage employees (Kelan & Wratil, 2017; Peterson, 2015; Powell et al., 2017). In short, managers are presumed to "have the authority [and] span of control to initiate and drive diversity initiatives through the organization" (Mattis, 2001, p. 375).

Though scholars not always explicitly address the position of this 'manager', as a rule they mean top managers, like chief executive officers. Their commitment to the good cause of gender equality is deemed crucial for change to happen (Benschop & van den Brink, 2018). One of the key roles of these top managers is to make sure that they engage middle managers[2], who have to 'make change happen' (Kelan & Wratil, 2017; Mattis, 2001). Whereas top managers have to "support the bold steps of change", "middle managers have an important role in leading the change" (McRoy & Gibbs, 2009, p. 697). It is specifically middle managers who are expected to "walk the talk" (Mattis, 2001, p. 385). This engagement of middle managers, leading the change and making it happen, is referred to as ownership (Kelan & Wratil, 2017; Mattis, 2001; McRoy & Gibbs, 2009). Ownership of middle managers appears to be a pivotal concept in effective change.

Regarding the resistance of managers against undertaking action, managers are seen to resist gender equality interventions by paying lip service to change, but consequently failing to follow through (Powell et al., 2017). A prominent reason for resistance to the action part of problem ownership is the (perceived) lack of resources (Lombardo & Mergaert, 2013). Thus, managers participating in gender equality interventions can easily feel they lack agency (Connell, 2005). Another source of resistance to the call to action stems from contrasting discourses of gender equality as the ethical thing to do and organizational norms in which gender equality is nice but not necessary (Powell et al., 2017). Powell and colleagues describe how this contradiction results in top-management initially giving support, but later withdrawing it.

Summing up, gender equality change literature describes resistance against both responsibility and action and addresses several causes for this resistance. The focus of this literature is on resistance as a hindrance to gender equality change, comparable to mainstream organizational change literature, which also

[2] We define middle managers as managers with "access to top managers while simultaneously being closely involved with and knowledgeable about operations" (Pfister, Jack, & Darwin, 2017, p. 139).

sees resistance to organizational change as detrimental to change initiatives (Argyris, 1990; Clegg, 1987; Wittig, 2012). However, recent literature suggests that resistance to organizational change can also be productive of change. In the next paragraph we discuss this literature.

Productive resistance

Theories on resistance as being detrimental to change began to shift when scholars started to contest resistance being a psychological characteristic. Instead, they framed resistance as the behaviour of a system seeking equilibrium (Dent & Goldberg, 1999). Also, scholars challenged assumptions regarding resistance, for instance concerning the dichotomy between change agents and change recipients (Ford et al., 2008; Thomas & Hardy, 2011), with change agents knowing best what the needs of the organisation are (Pina e Cunha et al., 2013). Moreover, resistance can be the result of ambivalent attitudes towards change (Piderit, 2000), or just a self-fulfilling prophecy: negatively labelled behaviour that change agents expect to see, arm themselves against, and thus invoke (Ford et al., 2008). In addition, scholars identified positive aspects of resistance, for instance resistance as a productive force, influencing and improving management decisions (Courpasson et al., 2012), or resistance as valuable feedback that can contribute to successful change (Ford & Ford, 2010). We find this take on resistance in gender equality change literature as well, in the argument that studying resistance can inform the design and planning of gender equality interventions, as it draws "a clearer picture of what hinders the effective implementation" (Lombardo & Mergaert, 2016, p. 58).

Taking resistance further, scholars argue that the practice of resisting itself can be productive of change when it results in negotiations about how to understand and to practice the change that is advocated. Resistance is a way of "challenging and rewriting of organizational discourse" (Thomas & Davies, 2005a, p. 701), and lies at the heart of change (Thomas & Hardy, 2011). This

perspective draws on organizational becoming literature (Tsoukas, 2009; Tsoukas & Chia, 2002; Van de Ven & Poole, 2005), also referred to as process organization studies (Sandberg & Tsoukas, 2015). Organizational change is seen as an ongoing discursive process, in which negotiations construct 'new meanings and interpretations of organizational activities' (Tsoukas, 2005, p. 98). Thus, organizational becoming is about continuous and interactive discursive practices between (groups of) employees. Resistance to change, in this view, is enacted in negotiations on how to understand and to practice change (Spee & Jarzabkowski, 2017). Mumby et al. (2017, p. 1169) characterize resistance to organizational change as 'productive managerial resistance', hinging on the ability of middle management to negotiate with top management. These negotiations might lead to organizational change in the form of new meanings and interpretations of organizational activities.

This view of resistance as productive of change is found in literature on gender equality interventions as well. Benschop and Van den Brink (2014, p. 17) argue that "[…] it is not possible to change routines and their underlying values silently without conflict and resistance". On the contrary, conflict and resistance leading to an open debate on core values is a blessing in disguise, as it brings underlying and implicit norms and values out into the open. Drawing on Thomas and Davies (2005b), who discuss feminist activism practiced in micro-level negotiations, Benschop and Van den Brink (2014, pp. 19-20) contend that resistance legitimizes gender inequality practices as "an arena for political contest". When underlying values and implicit stereotypes emerge in conflict and debate, they can be subject of negotiations. Thus, resistance might fuel a debate on gender equality practices, challenging existing power relations, and creating openings for change (Van den Brink & Benschop, 2017).

The literature thus far shows that the pressure on middle managers to take on problem ownership is bound to trigger resistance for a variety of reasons. It also contends that resistance enables organizational change, if and when resistance is

enacted through negotiations on meanings and interpretations of organizational activities. However, gender equality change literature lacks systematic micro-level explorations on how managers negotiate their role in gender equality interventions. This chapter embarks upon such an exploration. Drawing both on organizational change literature and gender equality change literature, we examine how middle managers negotiate their problem ownership in a gender equality intervention.

Methodology

To empirically study how managers negotiate problem ownership in gender equality interventions in academia, we chose three case studies (Yin, 2013) of interventions towards gender equality in research institutes of the science faculty of a Dutch university. These interventions were performed as part of a participatory action research project in 2014-2017. The faculty board of this science faculty was committed to cooperate in the project, seeking to improve the enduring numerical imbalance in men and women scientific staff. In the institutes of this case study, the overwhelming majority of scientific staff were men. Statistics on the years 2008-2014, provided by the faculty, show that full professorships in these institutes were exclusively or almost exclusively (95-100%) occupied by men, whereas the percentage of men PhD students was around 60-80%. This situation had hardly changed over the last ten years.

The intervention applied was group model building, a form of system dynamics. System dynamics aims to increase understanding of how systems work (Forrester, 1987), with the express goal of finding possibilities to intervene in the system (Meadows & Wright, 2008). Group model building differs from mainstream system dynamics in several respects. An important difference is the involvement of stakeholders. This is a central characteristic of

group model building, which is specifically designed to address problems that qualify as 'messy' (Vennix, 1996, 1999). Different stakeholders have different expertise with, perspectives on and interests concerning the problem at hand: getting them to jointly analyse the problem is thought to increase the quality of the analysis (Ackermann, Franco, Rouwette, & White, 2014). Stakeholder selection depends on the problem and the goal of the intervention: stakeholders can represent different organisations or interest groups, but also positions within the same organization. In the gender equality interventions of the case study, participating stakeholders were employees of a single research institute, working in different hierarchical positions. Henceforth we will refer to these stakeholders as participants. Group model building aims to give participants equal opportunity to introduce, discuss, and reject or accept concepts relating to the problem (Rouwette, 2011; Vennix, 1996). The method is considered to work well in interpretivist, subjective and nominalist approaches (Lane, 1999, 2000).

In general, group model building interventions take several sessions with participants, planned some weeks apart. In a typical intervention, working with a choice of standardized scripts (Hovmand et al., 2012), the facilitator first visualizes the problem that the participants want to understand, e.g. the development of the proportion of women in various scientific positions over the last twenty years. Next, participants identify possible causes and consequences of this problem. Consequently, the actual building of the model starts: one by one, and only upon consensus from all participants on their meaning and explanatory value, participants insert variables in the model. Finally, participants use the resulting model to identify levers for policy change.

Each intervention in the case study consisted of several meetings with a group of employees from one research institute. The commitment to undertake these interventions was a joint decision of the faculty board and the management of the research institutes. The management of the institutes and the facilitators jointly discussed participant selection, aiming to involve a variety of participants

in different hierarchical positions, with different expertise and interests regarding the problem of gender inequality. This choice of participants aims to enhance team learning, to create a shared problem analysis and to support the commitment to the implementation of change (Bleijenbergh & Van Engen, 2015). The management of each institute was explicitly expected to engage as well, in order to increase their commitment to the analysis and the subsequent suggestions for actions the group would come up with. The dean of the faculty had set an example by participating in the very first intervention of the project. So, though participation in general was voluntary, pressure on the management of the research institutes to participate was high. In each institute, participating management consisted of the scientific director, a position taken by a full professor on a temporary basis, and the managing director, a professional manager with most often a master's or doctoral degree in the field. We see the managers of the research institute as middle-managers (McRoy & Gibbs, 2009; Pfister et al., 2017).

Participating scientific staff consisted of postdocs up to full professors. In addition, in each group a gender researcher from the same university participated, bringing gender expertise in the discussions. Generally, group size for each intervention was around ten to eleven men and women, though there was some variation in attendance over multiple sessions. The author of this chapter facilitated the interventions, supported by alternating researchers.

Data collection and analysis

Data consist of interview reports with six participating managers before the intervention, transcription of 24 hours of audio taped interventions, and researcher memos written before, during and after the interventions. For the interviews with managers we used a topic list regarding (a) their views on gender inequality at their institute, (b) what had been done already about the problem, (c) possibilities or barriers for change, and (d) expectations about the group model building sessions.

We applied qualitative content analysis to select and analyse our data (Boeije, 2009). Going through our data iteratively, we identified all discussions on problem ownership, involving at least one of the managers during all intervention sessions. In doing this, we focused on specific words like 'responsibility', 'commitment', or 'act', but also on fragments indicating action, agency, helplessness, or responsibility. Next, for each manager, we looked for excerpts relating to their position on problem ownership. We found these texts either in the preliminary interviews or in the first phase of the intervention, when all participants were asked to voice their expectations of the gender intervention. The names of both the institutes and the managers are anonymized (Table 5.1).

Table 5.1 Managing and scientific directors in the case study institutes

	Institute Delta	**Institute Kappa**	**Institute Sigma**
Managing director	Selma	Floyd	Brenda
Scientific director	Ethan	Hugh	Stefan

Results

Problem ownership

We first describe how managers understood their problem ownership. We analysed their remarks on the subject in the interviews preceding the intervention and in the beginning of each intervention. This analysis confirmed that problem ownership can be conceptualized as a two-step concept, regarding first the willingness to take responsibility for addressing the problem of gender inequality, and next the willingness to actually do something about it. The first step concerns the acknowledgement of being a change agent rather than a change recipient. The next step concerns acting like a change agent.

One of the six managers denied there was a problem. Managing director

Floyd of Institute Kappa analysed the current gender imbalance in his institute as a 'coincidence', resulting from the quest for 'quality'. He claimed to be satisfied with standing policies on promotion and not to worry about gender imbalance. Thus, Floyd used the argument of meritocracy to downplay the importance of the problem. He implicitly denied even being a change recipient.

One of the managers did position himself as an – involuntary – change recipient. Scientific director Stefan of Institute Sigma distanced himself from committing to the intervention ("I will just see what happens"). He stated in the preliminary interview that he would not have organized the intervention if the choice had been his to make, suggesting that he had had no real say in the decision to engage all research institutes in these interventions. In addition, both in the interview as well as in the introductory round at the start of the intervention, he addressed the facilitators as change agents:

> *"I am curious to see […] whether we are doing a good job, or a bad job. […] And I turn around the pressure. What do you want to achieve here? […] I am curious about what you can do for us, with us." (Stefan, Institute Sigma)*

By inviting the facilitators to evaluate his department regarding gender equality, and by voicing that he expected actions from them, Stefan took a position as change recipient, expecting change agency from the facilitators.

We found that three managers voiced feelings of responsibility: they acknowledged that the institute had a gender problem and that they would have to do something. However, they depended on the facilitators to tell them what to do. Thus, Ethan, scientific director of institute Delta, stated in his preliminary interview: "*I fear we will not discover new things that can help us. I hope for a new insight with which we can do something.*" Managing director Selma of Institute Delta took a similar position. In her preliminary interview she said: "*I don't expect anything yet. I hope the intervention will lead to workable agreements on how to*

deal with things". Managing director Brenda of Institute Sigma indicated at the start of the first session that she hoped to "*get some tricks or tips on how we can improve the situation"*. However, both Selma and Brenda indicated they feared a lack of resources in the form of non-complying colleagues. Selma said that her colleagues showed only discursive support for gender equality: "*I hear the words, but do not see the belief*". Brenda did not see even this discursive support in her institute, saying that some colleagues in the institute felt that the gender equality intervention was "*a mission impossible*". Thus, perhaps implicitly, both Selma and Brenda acknowledged that there was a problem the institute played a role in. However, both articulated a lack of opportunities to act themselves. They implied that the attitude of their colleagues mattered more than their own possibilities to contribute to change. Summing up, the above three managers all acknowledge that there is a problem that needs intervention. They acknowledge their position as change recipient. However, they are sceptical about their possibilities to act, implicitly refusing a role as change agent.

In contrast, in the Institute Kappa, scientific director Hugh acknowledged that gender inequality was a problem for the institute and voiced high hopes at the beginning of the intervention. He hoped to learn what explicit and implicit factors were important, in order to have female talent feel at home.

> *"I see that we have a lot to gain […] concerning the through flow of female talent and the hiring of excellent female researchers. I am curious as to how we should do that, […] and what factors play a role. Explicit and implicit factors. I would like to get the implicit to the surface, so that they become explicit factors, and we also understand how it works. How female talent can feel at home in our institute, and, where this is not the case, how we can improve things." (Hugh, Institute Kappa)*

With statements like "*how we should do that*" and "*how we can improve things*", Hugh acknowledged responsibility and expressed willingness to act. In contrast

to the previous three managers, Hugh related his learning goal to a desire to increase his resources to act. His willingness to learn was personal ("*I am curious*"), but he remained vague on who would need to act: his 'we' can be understood as implying the management team, as well as everybody at the institute. He appeared to accept a kind of communal change agency.

Summing up, we found one manager who denied there was a gender inequality problem. In this case, problem ownership was non-existent. With the other managers, we found varying positions on both responsibility and action. One of the managers showed little responsibility, by acknowledging the problem, but implying that it was not his to solve. He showed no willingness to act. Other managers expressed moderate responsibility, acknowledging that there was a problem for the institute to solve. However, they stated they lacked the resources to do so – being either knowledge or support from colleagues. These managers shied away from action. Finally, one of the managers acknowledged responsibility, and was willing to act. We did not come across managers willing to act, without expressing responsibility for the problem of gender inequality. Therefore, we conclude that problem ownership is a two-step concept: acknowledging responsibility (talking) necessarily precedes willingness to take action towards gender equality (walking).

Negotiations on problem ownership

We next discuss negotiations on problem ownership during the gender equality intervention sessions. All managers took part in negotiations concerning the responsibility for gender equality change during the intervention. Some managers limited the negotiation to this responsibility, while several other managers also negotiated the extent of their willingness to act, discussing the interpretation of activities attached to their problem ownership. We found that the negotiation of both aspects of problem ownership - acknowledging responsibility for and expressing the willingness to act towards gender equality – is multi-layered.

This means that negotiations are not simply about acknowledging or declining responsibility, or willingness to act, but can also concern sharing responsibility and multi-actor action. In addition, we found that wondering whether gender equality is a problem, precludes problem ownership. We present four patterns of negotiations that we found in our case material.

Diplomatic denial

During the interventions, every single manager at some point explicitly argued that there was a gender inequality problem. However, some managers did – implicitly, tentatively and sometimes contradicting themselves – question the existence of gender inequality in their institute. We take as an example managing director Brenda from Institute Sigma. Throughout the intervention, she was in two minds about gender equality being a problem for the institute. In the beginning of the first session, she stated as her goal for the intervention to find out whether gender inequality was a problem for the department. At the end of the session Brenda said she wanted to learn: *"[…] how much work needs to be done in this group to make progress towards a better gender balance if it is not good now? How much is needed, how much DO we need the improvement and how can we achieve that?*" In this quote, we hear a lot of cautious diplomacy with Brenda keeping all options open, from working on improving gender balance to doubting whether there is a problem at all ("if it is not good now?"). When, during the second session, the participating gender expert talked about the gender pay gap research that was at that time being conducted at the university, Brenda challenged the existence of a pay gap in her institute: "*I know we are doing quite well in that respect. […] I can tell, I know. Women are very equal here.*" With this statement, Brenda clearly indicated that she saw no gender inequality in the institute, and temporarily discarded diplomacy in her denial of gender inequality. Finally, at the end of the third session, Brenda evaluated the intervention as a whole, saying: *"[I]t can*

be the start of other initiatives we can take as a group because it is not an easy problem. Or I think we concluded that there was not really a problem in this department, or in this institute." The second sentence is in direct contradiction to the first sentence. Because Brenda ends with the denial of gender inequality as a problem ("there was not really a problem in this department"), the need to act disappears. This manager consistently questioned the necessity of the intervention, packaging her doubts in conflicting remarks on how gender equality was a difficult problem that needed 'learning', and at the same time negating the existence of gender inequality at the institute. We conclude that this diplomatic denial of gender inequality results in implicitly refusing both responsibility and action implications of problem ownership.

Minimizing the action

Before the intervention, scientific director Ethan displayed medium problem ownership: accepting responsibility, but reluctance to act. He missed the first intervention session, giving priority to a last-minute festive family occasion. In the second session, he readily accepted responsibility as top manager of the research institute: "[…] if I speak for myself, there certainly is commitment to ensure that enough women [enter the institute]". However, in several negotiations he tried to postpone or minimize the work this problem ownership would entail. To give an example, we discuss a negotiation towards the end of the intervention, concerning the identification of levers for policy change. These levers are policy areas or topics that participants think the institute and its employees could impact upon in order to improve gender equality. Several participants identified *commitment from the top* as an important factor to support gender equality. Next, a discussion started on what this commitment would entail. This discussion evolved between Barbara, a woman researcher in tenure track for assistant professor, and scientific director Ethan.

Turn	Participant	Quote
1	Ethan	We can settle this point very quickly, because in the end this commitment should be expressed in concrete measures […]. This we can really [treat] as one of those things that we have to pay attention to continuously. Then you can just tick the box ['aftikken']. It comes on in 2016 and doesn't get off before 2026. It needs long-lasting attention. […] And with my [yearly, author] state of the institute, if I put in a slide on how we are doing with gender, […] that would be a very good one, I've got nothing against that. […] We always have yearly discussions with the directors of all groups, then we always have a whole list of things. We could easily add gender balance. […] Touch upon it, as agenda point, nothing wrong with that. […]
2	Barbara	But it is not just about making facts and figures known, it is also…
3	Ethan	[interrupts in a dismissive tone]: No, but everything that's to do with it.
4	Barbara	… about WHY women don't flow through, because you can say they don't, but WHY is this, and this is what I think decision makers do not realize where the problem actually is. And I think it is important, to clarify exactly that.
5	Ethan	Well, all right, if, say, if the decision maker for instance doesn't know, and you DO, Barbara, then you are free to tell, you know!
6	Barbara	Sorry?
7	Ethan	If you, if for instance I do not know, and you do, then you can tell me.
8	Barbara	No, well, I have learned a lot on facts and figures and underlying causes the last two years, and all these presentations and research from, ehm, professor X, and… So, these figures are there, all of them. Also, why people choose differently, and… But I do think this is more important than only showing facts and figures.
9	Ethan	Yeah, yeah. Yes.

Ethan, the scientific director is quick to accept commitment as an important point of action (turn 1): "This [is] one of those things we have to pay attention to continuously", and: "It needs long lasting attention". So, this implies he accepts problem ownership – though the use of the word 'we' in the first sentence, and the absence of an acting subject in the second sentence obscures how much agency he sees for himself. In the same turn, he suggests that showing commitment does not need to take a lot of time: "Then you can just tick the box", and "We could easily add gender balance. […] Touch upon it, as an agenda point". He is not pleased when researcher Barbara challenges his interpretation of commitment

(turn 2), arguing that aiming at gender equality is more than counting bodies (Alvesson & Billing, 2002). He interrupts her in a dismissive tone of voice (turn 3), indicating that he realizes there is more to gender equality, but remaining vague ("everything that's to do with it"). When Barbara perseveres in making explicit that decision makers should realize why women don't flow through (turn 4), Ethan challenges her (5). We consider his challenge intimidating because of the confrontational tone of voice, and the directness with which Barbara was admonished to speak up if she knew better. We think his remark was not meant as an open invitation to discuss what 'commitment' would imply in the eyes of the researcher, but rather as a remark meant to put her in her place. This interpretation is supported by Barbara's surprised and somewhat undignified 'Sorry?' (turn 6). Ethan repeats his remark, toning down confrontation (turn 7). Next, Barbara does embark on an explanation, but her voice trails off after a couple of sentences (turn 8). Finally, Ethan agrees, and his "Yeah, yeah. Yes" (turn 9) is a cue for other group members to change the subject. So, we find that Ethan displays an ambivalent position towards problem ownership. On the one hand he is quick in accepting responsibility for the policy point of commitment from the top, and in articulating concrete actions that he is prepared to persevere in for a long time. On the other hand, he downplays the amount of work it will bring ('just tick the box', 'touch upon it'), and blocks a negotiation when challenged on the content of his intentions. We conclude that accepting personal responsibility, but consequently negotiating towards minimal action implications of this responsibility, results in minimal problem ownership.

Diffusing ownership

In the previous paragraph, we found that scientific director Hugh of Institute Kappa acknowledged responsibility and was willing to act. We understood his use of an all-encompassing 'we', when talking about problem ownership, as meaning himself and his managing director. During the intervention, the impression that

Hugh accepted problem ownership remained, but questions arose as to whether this was indeed a personal responsibility for him. We discuss one example. At the beginning of the third session, a discussion started about what equality goals the institute should adopt. Scientific director Hugh was eager to interrupt. When he finally got the floor, he gave an emotional monologue; spoken in a loud voice and emphasizing several words.

> *"[…] Ehm, WHAT DOES KAPPA WANT? HELLO? Who are Kappa? That is US. Here, all of us together. There is no, what does Kappa want. That doesn't exist. Who are THEY? I have no idea […]. Kappa is us! We are here with a community of people together and have to take care that everybody can function WELL, that qualities are fully valued, that people feel comfortable ('senang') in their position and can fully develop themselves. […] The question is, how are WE ALL going to solve this, each from his [sic] own responsibility. […] Now we are going to see whether we can touch those levers, but those […] are levers that we REALLY need to operate ALL of us, otherwise it won't work. […] As if someone, you know, is accountable for that. We are, REALLY, we are all of us in this together, sorry!" (Hugh, Institute Kappa)*

After this emotional address, the group was silent for several seconds. We take this as a signal that scientific director Hugh's call to solve gender inequality together had made an impression on them. Hugh's monologue indicated acceptance of responsibility and willingness to act. However, the interpretation of problem ownership as something the institute does together, as something of a shared responsibility, is not without risk for the next step, that of implementation. When responsibilities are diffuse, are shared amongst 'all of us', who is going to take the lead and act? Who is going to be the change agent? The understanding of gender inequality as a shared problem indicates high problem ownership concerning

the acceptance of responsibility. However, because this responsibility remains at a somewhat abstract group level, this might negatively impact the action part of problem ownership. We conclude that embracing group responsibility and group action, by emphasizing that gender inequality is a joint responsibility that requires joint action, obscures personal responsibility and action, and results in diffused problem ownership.

Ambiguous positioning

Before the intervention, we saw that scientific director Stefan of Institute Sigma saw himself as a change recipient, effectively refusing problem ownership. During the first intervention session, however, he acknowledged that the problem is in part 'home made'.

> *"The actual environment that we have now, is made by us, made by the male dominated society. And so, it is very much driven into competitiveness, and not into compromise. […] If you look around at meetings you see also very successful females [sic] and they have a very female group. And therefore females [sic] seem to be very happy in a setting where there is a different culture. […] So, I think we have created an extremely competitive setting which becomes worse and worse. " (Stefan, Sigma)*

The acknowledgement that there is a 'we' who created a competitive setting in which women don't thrive could be the beginning of acknowledgment of responsibility. Indeed, Stefan had mellowed a bit at the end of the first session in his attitude towards the intervention: "It was less a waste of time than I thought it would be". However, he was absent without warning during the second session. This meant that he missed an important part of the actual model building, seriously hampering his understanding of the group's progress when he did attend the third meeting. In this final session, participants split up in three groups

to discuss levers for change. Stefan chose to discuss the subject of competitive culture, together with Brenda, the managing director, and assistant professor Kevin. Kevin was the spokesperson of the subgroup, reporting what they had discussed regarding competitive culture in the institute. Their subgroup had a clear idea of what was needed: '[We should] increase the level of collaboration actively […] to make sure that we feel as a community again.' When another participant challenged Kevin on the gender impact of such a goal, he defended the goal, saying that a woman most likely 'would feel more comfortable in a surrounding where she feels supported.' He gave two examples of how a more collaborative culture in the institute could be achieved: by asking feedback at early stages of project chapters and proposals, and by applying for grants in teams, rather than individually. Policy measures would need to ensure that such collaboration would be adequately valued in personnel appraisals. Despite the fact that other participants kept voicing sceptical remarks about practical implications as well as about the gender impact, this recommendation did end up in the written report on the intervention. Stefan did not support Kevin in defending the need to increase the level of collaboration. We do not know why. Did he think Kevin did a great job by himself? Or did he disengage from the discussion, as he disengaged himself from the intervention on several occasions? We find that Stefan acknowledged responsibility in stating that a problem is 'home-made' and addressable. However, after the small group negotiation, he did not show personal agency by appropriating the conclusions of his subgroup and supporting assistant professor Kevin. Though acknowledging group responsibility for at least some aspects of gender inequality, specifically a culture that hinders women, the scientific director of Institute Sigma refrained from supporting recommendations for group action. On the level of personal responsibility and willingness to personally undertake actions, he remained silent.

Resume

Our findings first of all bring us to conceptualize problem ownership of middle-managers as a two-step concept, in which feeling responsible precedes the willingness to act. We did not find any middle managers who expressed willingness to act, without first expressing feelings of responsibility. And when managers refuse responsibility by denying there is a problem, they deny action implications as well. Second, we found that managers negotiated the extent of their problem ownership during the interventions. We found four patterns of such negotiations, namely diplomatic denial, minimizing the work, diffusing ownership and ambiguous positioning (Table 5.2). The patterns of negotiation show how problem ownership can be denied ('diplomatic denial') or be acknowledged at group or personal level. We argue that problem ownership is sub optimal when it is negotiated on the level of group responsibility and group action, because it creates a hiding space for who exactly is going to take responsibility and subsequent action ('diffusing ownership'). In addition, group responsibility allows for denial of action implications ('ambiguous positioning'). Finally, negotiating problem ownership can entail accepting personal responsibility whilst minimizing the action involved ('minimizing the work').

Table 5.2. Negotiation patterns and problem ownership results

Results	**No**		**Group**		**Personal**	
Negotiation patterns	**Resp.***	**Action**	**Resp.**	**Action**	**Resp.**	**Action**
Diplomatic denial	X	X				
Minimizing the work					X	X
Diffusing ownership			X	X		
Ambiguous positioning		X	X			

*Resp. = Responsibility

Discussion

This chapter provides a theoretical and empirical elaboration of how middle managers negotiate problem ownership in gender equality interventions. We assert that problem ownership is a hitherto neglected part of gender equality interventions, especially where the role of middle managers is concerned. We conducted systematic micro-level explorations on problem ownership of middle managers involved in gender equality interventions. Our results show that, in problem ownership, acknowledgement of responsibility precedes willingness to act. We distinguish four different negotiation patterns in which middle managers negotiated the transfer of problem ownership regarding gender equality change, acknowledging responsibility and expressing willingness to act on a personal level, limiting it to group level, or denying it. These research results add to the literature on gender equality interventions in two ways.

First of all, we contribute to gender equality change literature by conceptualizing problem ownership of middle managers. Thus far, while problem ownership is presented as pivotal to the success of change interventions (Kelan & Wratil, 2017; Mattis, 2001; McRoy & Gibbs, 2009), research on the problem ownership of middle managers is scarce (Kelan & Wratil, 2017). We conceptualize problem ownership as a two-step notion in which responsibility precedes the willingness to take action. We show that both responsibility and action are not simple dichotomies, in the sense that people do or do not accept responsibility and do or do not take action. Our study provided detailed insights as to what problem ownership exactly entails, showing that there is a complex layering to problem ownership concerning personal and group responsibilities and actions. The classic case of not walking the talk (Mattis, 2001; Powell et al., 2017) concerns a manager accepting the first step of problem ownership at group level, but refusing the second step of problem ownership. We also found examples of managers accepting group ownership and calling for group action

or accepting personal problem ownership and minimizing personal action. When managers accept responsibility on a personal level, and show willingness to take action as well on a personal level, this resembles ownership of middle managers leading the change and making it happen as we find it in literature (Kelan & Wratil, 2017; Mattis, 2001; McRoy & Gibbs, 2009).

The complex layered concept of problem ownership allows for more detailed insights in what transfer of this problem ownership to middle managers entails. We argue that theories about gender equality interventions should incorporate the notion of problem ownership, as it adds scope and focus to the calls for building ownership (Mattis, 2001), for the transfer of problem ownership from gender trainers to managers (Callerstig, 2016), or for transforming managers from change recipients into change agents (Bleijenbergh, 2018). The concept makes explicit that the intervention needs to focus on personal responsibility and readiness to take action. The notion of problem ownership of managers differs from previous notions used in the literature such as shared agency and shared responsibility (Connell, 2005). Shared agency and joint responsibility can be goals to increase gender equality in society, but these goals remain general and do not suffice to activate middle managers in gender equality interventions. We contend that problem ownership of middle managers in terms of their acknowledgement of personal responsibility and personal action implications is important to further gender equality because of the vital role of middle managers in initiating and supporting change.

Our second contribution is to the design of gender equality interventions. Multiple interventions have been reported in the literature (Benschop et al., 2015; Vinkenburg, 2017). Here, we have discussed an intervention that compelled middle managers to openly negotiate their problem ownership regarding gender equality change. This intervention – participatory system dynamics – is designed so that participants from different backgrounds ((middle) managers, tenured and non-tenured faculty) work together to analyse gender inequality processes

in their research institute, and come up with ideas for actions to change these processes (Bleijenbergh & Van Engen, 2015; Rouwette, 2011; Vennix, 1996). In this participatory intervention, men and women in senior and junior positions in an organization cooperate. This creates a compelling space for negotiations. Our research showed how the intervention brings problem ownership – acknowledging some form of responsibility and willingness to act – to the group table. As this is a semi-public, group-based intervention, and participating middle managers are the obvious actors to take responsibility and action, the intervention does not allow them to remain change recipients. We have shown that problem ownership was a negotiation subject in all case studies: resistance to problem ownership materialized in four patterns of negotiation, concerning both the aspects responsibility and action, as well as the levels of problem ownership. Middle managers can try to minimize the action, or hide behind group responsibility and action, but they have to take a position on problem ownership; they thus have to engage with gender equality change.

In addition, our research showed how the intervention design undercut some of the causes for resistance to problem ownership. First of all, the joint analysis of gender inequality as a system's – and not (only) a cultural or individual problem – challenges prevailing views that gender inequality is not a problem for the organization to solve (Calás et al., 2014; Lombardo & Mergaert, 2013). Next, managers cannot claim not to have been involved in the analysis and action plans (Calás et al., 2014; Callerstig, 2016), and will have more difficulty claiming that they lack the agency or support to follow through (Powell et al., 2017). We conclude that problem ownership of middle managers should be a key issue in the design of gender equality interventions for two reasons. Firstly, when group discussions on the analysis of gender inequality and actions towards gender equality are the core of an intervention, this enables an open debate on gender equality practices, and thus supports organizational change (Van den Brink & Benschop, 2017). Secondly, when the design of the intervention involves

multiple actors in the problem analysis and results in the identification of actions, some of the usual reasons for resistance of middle managers are cut off. Instead, investments are made in their commitment to action (Bleijenbergh & Van Engen, 2015).

Further research into the role and position of middle managers in gender equality interventions (Kelan & Wratil, 2017) is needed. For instance, the 'dual agenda', which creates tensions and contradictions between a gender equality agenda and mainstream organizational goals (Acker, 2000; Benschop & Verloo, 2006; Walby, 2005) is possibly most pressing for middle managers, allowing them to reject problem ownership. In addition, research is needed into the role of men – and masculinities – in participatory gender equality interventions, for instance Bleijenbergh (2018), exploring reasons why men should or want to participate (Broadbridge & Hearn, 2008; Connell, 2005), or researching the influence of masculine – heroic – notions of the leadership of managers (Kelan & Wratil, 2017) in these interventions.

Chapter 6

Discussion

With this dissertation I aimed to increase the scholarly understanding of the transformational change capacity of gender equality interventions, by exploring theoretically and empirically how participatory system dynamics supports processes of generating, negotiating and acting upon gender knowledge. I employed participatory action research in the science faculty of a Dutch university, using participatory system dynamics in five research institutes. The interventions involved employees with different positions in academic hierarchy. They facilitated structured discussions on gender inequality processes in the research institute of the participants, resulting in a shared analysis of these processes and in a preliminary action agenda. The previous chapters addressed the processes of generating, negotiating and acting upon gender knowledge in these interventions. I focused on these processes because I argued they are key processes in gender equality interventions supporting transformational change. This enabled me to answer the central research question (*What is the transformational change capacity of participatory system dynamics as a gender equality intervention in science?)*.

In chapter 3 I zoomed in on gender knowledge generation, which is the foundation of any gender equality intervention for transformational change, necessitating the involvement of participants (Bird, 2011; Bleijenbergh & Van Engen, 2015; Heiskanen et al., 2015), having them understand that gender inequality is systemic (Acker, 2006b; Bustelo et al., 2016; De Vries, 2015), and that the primary locus of analysis is processes in the organization (Bird, 2011; Britton & Logan, 2008; Calás et al., 2014). I developed the concept of systemic gender knowledge, showing how transformational change requires systemic gender knowledge, and how this concept can be operationalized and analysed. Subsequent explorations of the systemic gender knowledge of participants to participatory system dynamics interventions gave insights in how this gender equality intervention impacted upon systemic gender knowledge. I found that small increases were possible regarding participants' insights in the interaction between

different gender inequality processes, as well as their focus on the relevant level of analysis, the organization. My findings contributed to insights in what gender knowledge is needed to understand, engage in and/or support transformational change towards gender equality. In addition, as a methodological contribution, this research showed how systemic gender knowledge can be visualized. Thirdly, this chapter indicated that gender equality interventions can lead to increases in the systemic gender knowledge of its participants, thus supporting transformational change.

However, the local gender knowledge of participants to gender equality interventions, meaning the gender knowledge that is dominant in a specific context (Cavaghan, 2017b), is generally based on conceptions of gender as an individual characteristic, and tends to be blind to the hierarchical relations and systemic character of gender inequality. Thus, systemic gender knowledge is contested, and can be seen as subjugated knowledge (Foucault, 1980). Generating this knowledge invokes a political process in which power dynamics are central (Alvesson & Kärreman, 2001; Bird, 2011; Ferree & Verloo, 2016; Heiskanen et al., 2015). In chapter 4 I explored negotiations on contested gender knowledge as an expression of power dynamics. I found four negotiation practices: exerting authority, displaying opposition, engaging query and sustaining relations, which interacted in different ways during gender equality interventions, producing five negotiation patterns: indifferent, antagonistic, blocking, constructive and reconstructive. The indifferent and antagonistic patterns resulted in continuing hegemonic gender knowledge, the blocking pattern resulted in making explicit contested gender knowledge, and both the constructive and reconstructive patterns generated new – systemic – gender knowledge. I concluded that the intervention of participatory system dynamics could support the generation of systemic gender knowledge via (re)constructive negotiations, but that the occurrence of these (re)constructive negotiations was subject to several conditions. These were: emotional engagement in a topic, sufficient ascribed seniority of gender experts

to guarantee discussion of difficult topics, and an intervention design allowing reopening of negotiations on the same topic.

Finally, I focused on the step from knowledge to action, as literature asserts that knowledge alone does not equal change, and that managers need to 'walk the talk' (Benschop & van den Brink, 2018; Bleijenbergh, 2018; Kelan & Wratil, 2017; Mattis, 2001; McRoy & Gibbs, 2009; Powell et al., 2017). In chapter 5 I explored how middle managers negotiated their own roles as problem owner in abating gender inequality. Micro-level explorations of negotiations in gender equality interventions showed that some managers expressed a sense of (group or personal) responsibility and, to a lesser extent, a willingness to act. I concluded that problem ownership has a complex layering, surpassing the classic dichotomy between 'walking' and 'talking'. In addition, I concluded that the semi-public and non-optional space for negotiations, which participatory system dynamics offers, supports middle managers to articulate their problem ownership.

Answering my research question, I found that participatory system dynamics has transformational change capacities as a gender equality intervention in science by addressing three key processes: the processes of generating, negotiating and acting upon gender knowledge. The intervention impacted upon participants' insights in systemic gender knowledge, supported negotiations establishing systemic gender knowledge and addressed action commitments. In the subsequent paragraphs of this final chapter, I expand upon the theoretical and practical contributions of my research to gender equality change literature. Finally, I reflect on the limitations of my study and provide suggestions for future research. The chapter ends with a brief conclusion.

Contributions to gender equality change literature

By exploring key processes regarding gender knowledge, my dissertation contributes to gender equality change literature in three ways. First of all, I add to literature by conceptualizing how productive negotiations in interventions support transformational change. My second contribution concerns the identification of design conditions that gender equality interventions need to meet to induce productive negotiations. My final contribution to gender equality change literature concerns insights on how participatory gender equality interventions try to atone democratic aims and power practices.

Productive negotiations

The first contribution of this thesis concerns the conceptualization of productive negotiations as an instrument in gender equality interventions aiming for transformational change. The concept of 'negotiations' is core to my entire research. My research explored how participants negotiated knowledge on gender inequality processes (systemic gender knowledge), transparency of hiring and promotion procedures, and change agency (problem ownership). In chapter 3, on systemic gender knowledge, I reported a negotiation between participants on the boundaries of their institute's influence, thus showing how negotiations contributed to participants' understanding of systemic gender knowledge. In chapter 4, I showed how (re)constructive negotiations concerning hiring and promotion procedures were required to arrive at new gender knowledge. I argued that when gender knowledge challenging hegemonic gender knowledge was formalized in the semi-public report of the intervention, it could contribute to transformational change. For when this happens, this new gender knowledge has a form that allows it to travel beyond the intervention, and reach people not present at this intervention (Cavaghan, 2013; Hardy & Thomas, 2014). In chapter 5, I argued that middle managers' resistance against problem ownership

opened up negotiations on the action implications of problem ownership.

Especially in chapters 4 and 5, I used the concept of productive resistance to inform my explorations of negotiations between participants during the interventions. The concept of productive resistance captures the idea that resistance fuels change (Thomas & Davies, 2005a, 2005b; Thomas & Hardy, 2011), and was used in gender equality change literature, for instance by Benschop and Verloo (2006) in their analysis of gender mainstreaming. By starting a debate on thus far implicit norms and values, these same norms and values become subject to change. Benschop and Van den Brink (2014, p. 17) argue that "[…] it is not possible to change routines and their underlying values silently without conflict and resistance". Eriksson-Zetterquist and Renemark (2016, p. 376) contend that "friction and resistance" are necessary elements of gender equality interventions, giving energy to the process of translating plans into actions, helping to keep the topic alive. My interpretation of the conflict and friction present in the intervention was that these signalled emotional engagement, and I concluded that it was one of the conditions for constructive negotiations, leading to the generation of new gender knowledge. Thus, my research suggested that negotiations need the conflict and friction of productive resistance in order to contribute to transformational change. In other words: transformational change requires resistance in the form of emotionally charged negotiations.

That is why I join negotiations and productive resistance into one concept: productive negotiations. I define productive negotiations as the structured discussions between participants in an intervention which explicitly invites and organises productive resistance. I argue that it is specifically productive negotiations which facilitate the generation of systemic gender knowledge; which enable systemic gender knowledge to be rendered in a form that can travel; and which stimulate specifying group or personal responsibility and commitment to action. Each result of productive negotiations in itself may contribute to transformational change. Systemic gender knowledge however has a special role

in this conceptualization, as it specifies the content of the knowledge supporting transformational change. The traveling gender knowledge needs to be systemic, and the action implications need to be based upon systemic gender knowledge in order to contribute to transformational change. Figure 6.1 shows how productive negotiations contribute to transformational change and visualizes the central role of systemic gender knowledge.

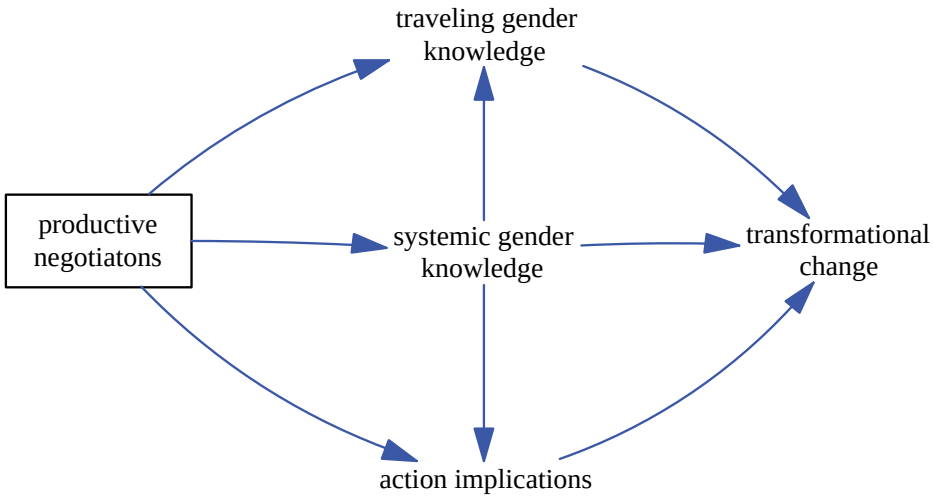

Figure 6.1. Productive negotiations facilitating transformational change

Design of gender equality interventions

This paragraph discusses the second contribution of my research on participatory system dynamics as a gender equality intervention. This contribution relates to the design of interventions aiming at transformational change. Hitherto, questions on how transformational change is to be achieved, are at best partially answered (Benschop et al., 2012; Dobbin & Kalev, 2016; Moss-Racusin et al., 2014; Nishii, Khattab, Shemla, & Paluch, 2018; Parsons & Priola, 2013). Specific conditions enabling gender equality interventions to aim for transformational change are scarce (Mitchneck et al., 2016). To my knowledge, only Vinkenburg (2017) has

formulated design specifications for systemic diversity interventions: engaging gatekeepers, optimizing decision making, and mitigating bias. My contribution to gender equality change literature pertains to conditions which enable productive negotiations. I will discuss three intervention design conditions, which, in interaction with each other, enable productive negotiations to occur. Figure 6.2 below visualizes the full conceptual model of my argument.

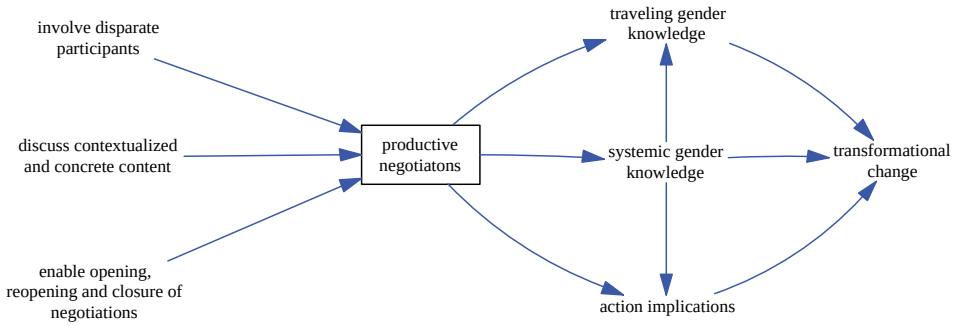

Figure 6.2. Model of productive negotiations.

1. *Involve disparate participants*

There is abundant scholarly agreement on the need for interventions aiming for transformational change to be participatory: a gender equality intervention aiming for transformational change should involve the people it concerns (Bleijenbergh & Van Engen, 2015; Coleman & Rippin, 2000; Ely & Meyerson, 2000b; Krizsan & Lombardo, 2013; Lines, 2004; Mitchneck et al., 2016). This general maxim, however, leaves room for different rationales underpinning who exactly should be involved. The first important rationale behind involving organization members in gender equality interventions concerns the ethics of interventions – namely that the intervention should empower oppressed people. This is one of the founding ideas of participatory action research (Bleijenbergh et al., 2018; Freire, 1970; Swantz, 1996). Secondly, researchers argue that participation of organization members, both in and outside of management positions, is key

to connect multiple perspectives on a problem. Bringing together "all levels of the organization" (Eriksson-Zetterquist & Renemark, 2016), using "social categories as sources of diverging experiences and perspectives" (Heiskanen et al., 2015, p. 8), should serve this goal. Participatory system dynamics also aims to involve participants with different views on a problem that is to be analysed in its specific context (Bleijenbergh & Van Engen, 2015). The third reason to involve organization members in gender equality interventions is reduction of resistance or increase of cooperation. For instance, managers are said to refuse to take on problem ownership because they have not been involved in creating action plans they can engage with (Cavaghan, 2017a). This reasoning leads to the involvement of policymakers (Lombardo, Meier, & Verloo, 2017), stakeholders (Goltz & Sotirin, 2014) or managers (Lines, 2004): these are the people who are supposed to act towards gender equality. Summing up: gender equality change literature argues that interventions should be participatory in order to empower oppressed people, to connect multiple perspectives, and to reduce resistance or increase cooperation.

I have a different view on the third reason to involve participants in gender equality interventions. Adding to literatures arguing the case of productive resistance (Benschop & Verloo, 2006; Thomas & Davies, 2005a, 2005b; Thomas & Hardy, 2011), my research has shown that the participation of people with differential interests, opinions, and experiences enables discussions to reach the level that they emotionally mean something for participants. I labelled this emotional engagement, and I showed that it was instrumental in constructive negotiations. Gender equality interventions should seek the friction and energy of resistance. Working with participants that are as disparate as possible, differing as to their gender, experiences, backgrounds, and hierarchical positions, can evoke this emotional engagement. Therefore, the involvement of disparate participants is needed to create the circumstances for emotional engagement. In other words, gender equality interventions should involve disparate participants, both women

and men, in hierarchically different positions; career starters and renowned professors, managers, gender equality advocates and meritocracy supporters.

I fully realize that this design principle might be undermined by power practices in gender equality interventions: involving disparate participants will increase the likelihood that power practices interfere with democratic aims. Differences in (ascribed) seniority between participants with different gender knowledges, and between participants and the participating gender expert probably influence the generation, negotiation and acting upon gender knowledge. I will discuss this gap between democratic aims and power practices in gender equality interventions in a separate paragraph.

2. Discuss contextualized and concrete content

My research is built on the notion that organization members should acquire knowledge of processes and practices that (re)create gender inequality (Benschop et al., 2015; Bird, 2011; Bleijenbergh & Van Engen, 2015; Britton & Logan, 2008; Bustelo et al., 2016; Ferree & Verloo, 2016; Krizsan & Lombardo, 2013; Meyerson & Kolb, 2000; Vinkenburg, 2017). To describe this knowledge, I introduced the notion of systemic gender knowledge, capturing two characteristics making gender knowledge systemic. One characteristic – a focus on the relevant level of analysis – is of importance here. This characteristic implies that systemic gender knowledge is contextualized knowledge, regarding the own organization of organization members participating in a gender equality intervention. Scholarly literature shows this is important because gender inequality processes are highly dependent on context (Britton, 2017; Holmes, Jackson, & Stoiko, 2016; Mitchneck et al., 2016). In addition, organization members can recognize gender inequality better if the analysis of its persistence is contextualized, rather than treated as a general phenomenon: "Strategies and initiatives that fit women's experiences of gender at work, and that specifically address the levels at which they see it emerge as salient, are far more likely [than strategies based on an

assumption of a chilly climate] to be successful" (Britton, 2017, p. 23). The intervention in my research, participatory system dynamics, helped participants to focus on the system of gender inequality in the research institute that the participants were employees of, as I showed in chapter 3 of this dissertation. The intervention considered participants to be experts on how gender inequality processes emerge in their organization. Such an approach not only empowers participants, but it also makes it more likely that those processes surface which are salient, and thus meaningful to the participants.

In addition, my research has shown the importance of being concrete, by addressing action implications of the agreed upon analysis of gender inequality in the organization. Many researchers have argued there is a gap between theory and action (Bleijenbergh & Van Engen, 2015; Kulik, 2014). An important reason for this gap is the absence of conceptual elaboration: "translating abstract commitments […] into clear prescriptions for activity" (Cavaghan, 2017a, p. 44). Eriksson-Zetterquist and Renemark (2016, p. 375) compared two programs aimed at increasing gender equality in Sweden. They found that "complications arose when the formal aims of gender equality were to be translated into action. […] Instead of being translated into concrete actions, the idea of gender equality remains connected to official presentations, and fades away under the burden of everyday problems." Thus, incorporating the phase of transforming aims into actions in the intervention itself, scheduling the action implications of the joint analysis of gender inequality processes into the program, as participatory system dynamics does, might help to decrease this gap.

Finally, I propose that there is a link between the above considerations concerning content, and the need to address participants at an emotional level, stimulating emotional engagement. Addressing contextualized knowledge, and already discussing its action implications in the gender equality intervention, helps participants to see what is at stake for themselves and their colleagues. I showed, for instance, in chapter 4, how a female professor endorsed transparent

hiring procedures in general but resisted implications for the way she herself hired people. In this instance, resistance emerged out of "a particular proposal for change" (Bergqvist et al., 2013, p. 281). The result was a practical agreement which increased transparency, and which was judged to be workable. This negotiation result would not have emerged when the discussion would have remained at a theoretical level. I propose that to make negotiations matter, they should address more than general analysis and politically correct but vague intentions, but that they address contextualized knowledge and concrete action implications.

3. Structure negotiations

My research brings me to contend that structuring negotiations in gender equality interventions is a key condition for productive negotiations. Structuring negotiations implies that the intervention design incorporates the opening, reopening and explicit closure of negotiations. The effect is twofold: power dynamics working at blocking new gender knowledge can be repeatedly challenged, and negotiation results are translated in a form that allows them to travel. This recommendation is based on my research in chapter 4, on power dynamics in gender equality interventions.

In this fourth chapter, I explored power dynamics in organizational change processes by conducting a micro-analysis of negotiations on contested gender knowledge. This research built on an organizational becoming perspective, in which "organizational change is the process of constructing and sharing new meanings and interpretations of organizational activities" (Tsoukas, 2005, p. 98). Power dynamics in this process materialize as "discursive struggles" (Kemp et al., 2010, p. 579), determining what knowledge is discarded, and what knowledge counts (Alvesson & Kärreman, 2001; Grant et al., 2005). In gender equality change literature, it is widely acknowledged that power dynamics influence the generation of new gender knowledge (Cavaghan, 2013; Ferree & Verloo, 2016). However, these power dynamics are as yet a black box, which I hoped to open

up with my micro-analysis of negotiations on contested gender knowledge. My research showed that power dynamics result both in blocking and in furthering new gender knowledge. I found different negotiation patterns, resulting in either the continuation of hegemonic gender knowledge, the generation of new gender knowledge, or a stalemate. The stalemate was the result of either a blocking or an antagonistic negotiation pattern, in which participants with positional power exerted their authority to contest new gender knowledge. Would the negotiation be finished at that point, no new gender knowledge would have come out of it. I found that reopening of negotiations on the same topic at a later stage of the intervention is a necessary condition for the generation of new gender knowledge. I concluded that when an intervention design allows reopening of negotiations on the same topic, it offers opportunities to switch between negotiation patterns. Opposition and authority can thus (initially) block new gender knowledge, but reconstructive negotiations can make amends, and result in new gender knowledge. This illustrates that the intervention design needs to support the opening and reopening of negotiations.

However, just opening and reopening negotiations is not enough for new gender knowledge to emerge as signifier of organizational change. We saw that new meanings are only evidence of organizational change when knowledge is rendered in a form that allows it to travel throughout the organization (Cavaghan, 2013; Hardy & Thomas, 2014). The report that is written after a participatory system dynamics intervention, containing a visualisation and description of the knowledge participants shared, discussed and agreed upon, is an example of knowledge that can travel. Therefore, I defined 'new gender knowledge' in chapter 4 as gender knowledge that was included in the semi-public written report of the gender equality intervention. This brings me to the final condition regarding the structuring of negotiations: they have to be explicitly brought to a conclusion. The explicit closure of negotiations, resulting in agreed upon new meanings, written down in a semi-public report, is key. This allows knowledge to

travel through the organization and to thus contribute to organizational change (Cavaghan, 2013; Eriksson-Zetterquist & Renemark, 2016; Ford, 1999; Hardy & Thomas, 2014).

Democratic aims and power practices

The previous paragraphs ended with a somewhat optimistic take on gender equality interventions: given the right intervention design, organizational change is possible. I already announced that the design criteria I identified in the previous section abstracted away from power practices. In this paragraph, I unpack the gap between the democratic aims of the intervention and the power practices at play. I will start with the claim to democracy of participatory gender equality interventions.

Participatory interventions, in general, are meant to cross hierarchical boundaries, and to give all participants 'the same status' (Heiskanen et al., 2015, p. 8). Interventions involving stakeholders in gender knowledge generation (Bird, 2011; Bleijenbergh & Van Engen, 2015; Heiskanen et al., 2015), all have the more or less implicit goal of creating a level playing field during the intervention for participating stakeholders. "The aim of working in small groups with a certain composition is to ensure a safe and open atmosphere for the participants to discuss freely their experiences and thoughts and thus empower certain groups" (Heiskanen et al., 2015, p. 8). Participatory system dynamics is no exception. It is geared towards giving participants equal opportunity to introduce, discuss, and reject or accept concepts, thus improving communication, consensus and commitment (Rouwette, 2011; Vennix, 1996). In other words, participatory system dynamics is "a dialogical intervention […] enabling conditions within which stakeholders can share their views of social reality and seek common agreements in real time. The role of the [facilitator] is to help create and maintain a safe and bounded space for interactions and to explicitly or implicitly attend to the political dynamics inherent in bringing together different [participants] with

different bases of power and beliefs" (Bushe & Marshak, 2009, p. 356).

In many descriptions of participatory system dynamics this equality of participants is taken for granted, for instance when distilling lessons on good modelling practice (Elsawah et al., 2017). Hierarchical differences between participants are merely touched upon, for instance when talking about "collaborative enquiry" (Antunes et al., 2015, p. 347), without specifying what it means or how it can be achieved. An instance of referrals to non-problematic power differences is found in Stave (2010, p. 2778), who voices concerns for "internal inclusion (making sure the people at the table all have equal weight in discussions)", and suggests that once participants know each other well they will "contribute equally to the [discussions]" (Ibid., p. 2781). Power dynamics are implicitly discussed in Midgley et al. (2013, p. 147), when the authors explain how the context of the intervention matters in designing and evaluating participatory system dynamics: They refer to but do not explain "the relationships between the participants", "social capital", "managers […] open to power sharing', "politics and personalities" and, last but not least: "processes of marginalization that may constrain stakeholder participation or make the discussion of some phenomena taboo". To get a more nuanced view on power dynamics in this field of interventions, one needs to refer to literature on organizational development, which incorporates participatory system dynamics as a form of dialogical intervention: "Those with a dialogical perspective who are attuned to critical and postmodern theories, may, perhaps, be more aware of limitations to attaining ideals like free and informed choice [...], participative democracy [...], and trust and collaboration [..] than were the pioneers" (Bushe & Marshak, 2009, p. 357). In addition, in the field of international development, power is sometimes problematized. Hovmand (2014, p. 8), for instance, does pay attention to status and power when describing participatory system dynamics in developing countries: "[…] one must be critical of how status and incentives to participate can distort interactions. This requires […] sensitivity to how power

and privilege operate within a community […]". To this end, Hovmand advises to include in the modelling process "community facilitators who […] can identify/ mitigate power dynamics among participants." However, this advice is given in a context in which rural villagers have to defend their interests against international commercial companies, and in which facilitators are foreign to a community, and do not speak the language. In circumstances of western based interventions with western participants, which comprises the abundant majority of system dynamic projects (R. J. Scott, Cavana, & Cameron, 2016), to my knowledge, power dynamics between participants are hardly considered.

This ideal image of democratic interventions in which all participants can express themselves at will, every opinion is valued in its own right, and every emotion finds respect if not recognition, is bound to be at odds with reality. For instance, personal or group interests are likely to permeate the discussion and lead to discursive execution of power (Thomas et al., 2011). My research showed that positional power is relevant in participatory system dynamics interventions. It first of all showed how participants in senior positions successfully (if sometimes only temporarily) blocked new gender knowledge, by exerting authority, which easily led to antagonistic negotiation patterns. I concluded that it requires (attributed) seniority for the exertion of authority to result in systemic gender knowledge generation. In addition, my research showed that the authority of the gender expert is crucial to block dismissal of contested gender knowledge in favour of hegemonic gender knowledge. I showed how some gender experts succeeded in keeping a subject on the agenda, whereas others did not, and I concluded that differences in authority were responsible for these outcomes. Thus, I concluded that gender experts need enough 'clout' to keep contested gender knowledge a topic of discussion and – possibly – further the generation of new gender knowledge. They need to exert authority to defend the critical goals of the intervention.

Simultaneously, it is recognized that participatory gender equality

interventions are bound to water down on critical goals, as they need to be endorsed by the organization that is to be transformed (Acker, 2000; Benschop & Verloo, 2006). All action research "[…] cannot easily prevail against entrenched structures of domination" (Huzzard & Johansson, 2014, p. 83). This happened in my research, where access to the organization was granted via the faculty board, which decided to engage in the group model building interventions because of positive experiences with an earlier pilot[1]. Managing and scientific directors agreed to cooperate and to participate in the interventions. This cooperation did however come at a price: it resulted in dressing down the radical aims of the interventions, calling them 'gender workshops' rather than transformational change interventions; aiming to redress numerical balances rather than structural inequalities. This is why most strategies aiming for transformational change adhere to the practical strategy of small wins (Ely & Meyerson, 2000b; Meyerson & Kolb, 2000), acknowledging that there is no one shot solution (Parpart, 2014). This certainly is a viable option, considering that change is a co-creation (Pina e Cunha et al., 2013), that change is the temporary result of a complex social struggle of different actors with different interests (Benschop & Verloo, 2011; Parpart, 2014). Thus, strategies targeting transformational change put their cards on incremental change (Krizsan & Lombardo, 2013). This one-step-at-a-time approach comes with the realization that change is uneven, and does not consist of neat little steps forward (Garforth & Kerr, 2009). In the introduction to this dissertation, I described transformational change as challenging organizational systems of power and the privileging of hegemonic knowledges over alternative knowledges. The key rests in the verb "challenging": transformational change is achieved by challenging the system. Continuously. Therefore, though the goal of the intervention might be radical change, the strategy must be tempered. "We invite critical diversity scholars to take a tempered radical stance and not to give

[1] The pilot concerned a group model building intervention in one of the research institutes of the faculty, conducted by researchers in the EU FP7-project STAGES, 2012-2015.

up the search for organizational practices calling into question institutionalized inequality" (Janssens & Zanoni, 2014, p. 329).

From my research a picture emerged of how negotiations are key in this continuous challenge of systemic gender inequality; how gender equality interventions should enable productive negotiations in participatory interventions, consisting of negotiating new meanings, giving new knowledge a form that can travel, and explicitly addressing action implications. My research showed the importance of enabling and structuring these negotiations and to keep them going. To summarize these findings, I would therefore say: Keep talking!

Reflection on limitations and future research

In this paragraph, I reflect on the methodological limitations of my research and suggest some future research. My choice of participatory action research methodology flows from a social constructionist research paradigm (Bleijenbergh et al., 2018; Cunliffe, 2011; Pringle & Booysen, 2018). This obliged me to explicitly reflect on my role as a facilitator, and on the intervention process, which I have done in chapter 2 of this dissertation. Carefully crafting my research, explicitly reflecting upon the choices I made, recognizing the limitations of self-reflection (Kemmis, McTaggart, & Nixon, 2015), I hope to have answered to expectations on appropriate rigor in qualitative, social constructionist research (Argyris & Schön, 1989; Cunliffe, 2011).

Regarding relevance, I argue that being both a change agent and a researcher in this participatory action research is not limiting my research results, as researchers with more objectivist research orientations would possibly contend (Amis & Silk, 2008). I argue that this double role is a specification of the context within which I have arrived at the knowledge presented in this dissertation. My being both a change agent and a researcher in participatory action research in

the science faculty of a Dutch university serves to situate and contextualize my perceptions and interpretations of the research data that I gathered.

Of course, my double role of researcher and change agent has directed – limited if you wish – the scope of my research. I specifically have in mind the subject of power processes between facilitator and participants. My research showed that the hierarchical position of participants and the authority of the gender expert influenced their capability to block or endorse new gender knowledge. I imagine that the same holds for the facilitator: Authority might support a facilitator in holding on to the critical goals of the intervention. Several observations indicate that this authority is a challenge to achieve for female facilitators in a gender equality intervention. In chapter 2 I already discussed the structural limitations concerning embodiment and the friction between facilitator neutrality and feminist partiality, possibly detracting from authority. In addition, gender scholars assert that the professional qualities of the female facilitator are easily doubted (Bleijenbergh, 2018), which even more subtracts from her authority. Without reverting to an objectivist ontology, hoping for a neutral researcher discovering certain truths about reality, I think a meaningful exploration of this relation needs the eye of a non-participating researcher. Thus, further research might shed light on questions concerning the facilitator role in participatory system dynamics.

Conclusion

My dissertation research revealed that gender equality interventions need to be employed as a 'pressure cooker for change': creating negotiations in a more or less safe space, whilst semi-public and accountable, and with both women and men, junior and senior faculty. Participatory system dynamic interventions can thus function as an incubator for gender equality change: offering a space

and a moment in time for productive negotiations, continuously challenging the system by supporting organization members to talk about the system. I found three intervention design conditions which enable these productive negotiations: the involvement of disparate participants, the discussion of contextualized and concrete content, and the structuring of negotiations. Calls to keep gender inequality on the agenda are ubiquitous, but my research adds a reason why this is necessary and what design conditions can make it happen.

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English summary

For a non-academic audience[1]

Pay disparities, devaluation of women's work, and women's absence at higher levels of organizations are contemporary signals of enduring gender inequality in organizations. Influential authors Calas, Smircich and Holvino (2014, p. 18) asked whether "scholarly literature [can] do more than document such facts", and this dissertation research took up their challenge. My participatory action research involved over sixty researchers and employees of a Dutch science faculty, which struggled with persistent unequal representation of women researchers, especially in higher ranking positions. Using participatory system dynamics interventions as a facilitator, I supported the participants in analysing the processes underlying gender inequality in their institute and finding levers for change. They identified and discussed processes on individual, organizational and societal levels, and agreed upon action points that would help abate gender inequality in their institute. Simultaneously, as a researcher, I explored these interventions with a lens of their contribution to processes of generating, negotiating and acting upon gender knowledge. Thus, my research contributes both to scholarly and practical insights on gender equality interventions using participatory system dynamics.

Introduction

The first two chapters introduce the research question and methodology.

Chapter 1 lays out the groundwork for my research on gender equality interventions. To begin with, I discuss how gender is a hierarchical social construction, in which it is self-evident that masculinity - a concept with a fluid content - is valued more than femininity. Gender inequality is then the result of the interaction of processes that place people in a socially constructed hierarchy of power and privilege. Sustainable change requires that these power processes, which lead to a natural distribution of power and privilege, be addressed and

[1] For an academically-oriented summary, please go to Chapter 6: Discussion

that organizations change the rules of the game. Then transformational change becomes possible. Gender researchers argue that people who participate in interventions aimed at such transformational change should acquire knowledge about the interaction between the processes that (re)produce gender inequality. The generally prevailing, self-evident gender knowledge does not see this systematic inequality, considers the status quo to be normal and just, and places the responsibility for change with the people who are actually disadvantaged by the system of gender inequality. In the empirical chapters of my research I address issues concerning the (new) gender knowledge that participants should acquire. The research focuses on a science faculty in the Netherlands, which was struggling with a persistently low percentage of women researchers in higher positions. In 2014, less than ten percent of associate and full professor positions were occupied by women. Five research institutes of this faculty cooperated in my research in order to address the unequal representation of women in all, but especially senior research positions. The project was designed as participatory action research and implemented between January 1, 2014 and December 31, 2017. The purpose was to increase gender awareness amongst participants, construct a joint analysis of processes (re)creating gender inequality in the research institute, identify levers for policy change, and transfer problem ownership.

Chapter 2 concentrates on methodology, starting with the research approach of participatory action research. This approach is aimed at solving problems by challenging and disempowering hegemonic knowledge, and thus developing new knowledge. In this aim of critical knowledge production, researchers and participants collaborate. I used participatory system dynamics, specifically group model building, to design and execute my participatory action research. This intervention is designed to acknowledge and work with the differences between participants who are considered to be experts on the problem that is the focus of analysis. In a democratic process of knowledge elicitation and negotiations, participants are supported in visualising the processes causing the problematic

behaviour of the system. In my research, this concerned the system of gender inequality in science. The chapter gives specifics on the interventions which I applied, the data collection and the data analysis. I also reflect on my positions as facilitator and researcher, which do not always align. For example, a facilitator has to take a neutral position, but I carried out the intervention from a non-neutral position as a gender researcher. And sometimes, as a facilitator, I struggled with the resistance of the participants, while as a researcher I knew that this resistance was a goldmine for my research.

Findings

Chapters 3, 4 and 5 present my main findings.

Chapter 3 introduces the concept of systemic gender knowledge as a key condition of gender equality interventions aiming for transformational change. Building on system dynamics and gender equality change literature, I defined systemic gender knowledge as an endogenous view on interacting processes (re)producing gender inequality. This concept captures two characteristics: an endogenous view, which in the context of the intervention implies a focus on relevant processes in the organization; and interacting processes, concerning knowledge of feedback loops in which processes relate to each other as both cause and consequence. In addition, I developed an analytical tool to enable exploration of systemic gender knowledge by reconstructing graphical representations of participants' systemic gender knowledge. The subsequent detailed exploration of systemic gender knowledge of participants showed that the intervention impacted upon both characteristics of systemic gender knowledge.

Chapter 4 focuses on power dynamics in negotiations on gender knowledge. I examined in detail the power dynamics that were expressed in negotiations on the transparency of the recruitment or promotion procedures. I chose this subject, because it is well known that hegemonic gender knowledge denies that transparency is a factor in the recreation of inequality. I found that different

negotiation practices – exerting authority, displaying opposition, engaging query and sustaining relations – interacted in different ways, producing five negotiation patterns. These patterns differed in their results concerning the generation of new (systemic) gender knowledge. I concluded that three conditions were key in the emergence of new gender knowledge: emotional engagement, an intervention design enabling the reopening of negotiations, and sufficient attributed seniority of participants with gender expertise.

In chapter 5 I explored how the middle management participating in the interventions for gender equality deals with expectations about their problem ownership. They are expected to take responsibility for changes in the field of gender equality. At the same time, it is known that they are resisting this, for a variety of reasons. I see problem ownership as a two-step concept, namely recognising responsibility and expressing willingness to act. I found that middle managers negotiate the extent of their problem ownership and that there is a complex layering to problem ownership which goes beyond the classical dichotomy between 'walking' and 'talking'. I concluded that the creation of a semi-public and non-optional space for negotiations supports middle managers in articulating their problem ownership.

Conclusions

Chapter 6 offers a general discussion. I argue that my research has shown, by applying a micro-lens to gender knowledge negotiations, that participatory system dynamics can contribute to gender equality by impacting upon three key processes enabling transformational change: generating, negotiating and acting upon gender knowledge. Aggregating the empirical research from the three previous chapters, in this final chapter I formulate three contributions of my dissertation research.

First of all, I conceptualise the notion of productive negotiations in participatory gender equality interventions. I define productive negotiations as

the structured discussions between participants in an intervention which explicitly invites and organises productive resistance. I argue that productive resistance – explicit debates on norms and values – is dependent on the intervention design to result in transformational change. My second contribution is the identification of design conditions enabling productive negotiations: involving disparate participants; discussing contextualised and concrete content; and enabling opening, reopening and closure of negotiations. Finally, I contribute to gender equality change literature with insights on how participatory gender equality interventions try to atone democratic aims and power processes. My research has shown how positional power of participants does influence negotiations and negotiation results, both working towards continuation of hegemonic knowledge as well as towards defending the critical goals of the intervention. In short, my research showed the centrality of productive negotiations in gender equality interventions and the importance of enabling and structuring these negotiations. This aligns with the understanding of transformational change as continuously challenging organizational systems of power and privileging hegemonic knowledge. The verb 'challenging' is key in this understanding: change comes about only by challenging the system over and over again. Enabling and structuring productive negotiations in gender equality interventions is a means to support this continuous challenge. With this conclusion in mind, the title of my dissertation summarizes my advice regarding gender equality interventions: Keep talking!

Nederlandse samenvatting

Voor een niet-academisch publiek[2]

Ongelijke betaling, een lagere waardering van het werk van vrouwen, en de afwezigheid van vrouwen op hogere niveaus in organisaties zijn hedendaagse signalen van aanhoudende genderongelijkheid in organisaties. De invloedrijke auteurs Calas, Smirchich en Holvino (2014, p.18) vroegen of "wetenschappelijke literatuur meer kan doen dan deze feiten opschrijven", en dit promotieonderzoek heeft deze uitdaging opgepakt. Ik heb participatief actieonderzoek uitgevoerd waarbij ruim zestig onderzoekers en andere medewerkers van een Nederlandse bètafaculteit betrokken zijn geweest. Deze faculteit had te kampen met een hardnekkige onevenwichtige vertegenwoordiging van vrouwelijke onderzoekers, met name in hogere posities. Gebruikmakend van participatieve systeemdynamica faciliteerde ik de deelnemers in het analyseren van de processen van genderongelijkheid in hun instituut en in het vinden van aanknopingspunten voor verandering. Zij identificeerden en bespraken processen op het niveau van het individu, de organisatie en de samenleving, en werden het eens over actiepunten die moesten helpen bij het verminderen van genderongelijkheid in hun instituut. Tegelijkertijd, als onderzoeker, verkende ik deze interventies op hun bijdrage aan processen betreffende het genereren van, onderhandelen over, en actie nemen op genderkennis. Zo draagt mijn onderzoek bij aan zowel wetenschappelijke als praktische inzichten over interventies voor gendergelijkheid die gebruikmaken van participatieve systeemdynamica.

Introductie

De eerste twee hoofdstukken introduceren de onderzoeksvraag en de methodologie.

Hoofdstuk 1 legt het grondwerk voor mijn onderzoek naar interventies voor gendergelijkheid. Om te beginnen bespreek ik hoe gender een hiërarchische sociale constructie is, waarin het vanzelfsprekend is dat masculiniteit – een

[2] Voor een wetenschappelijk georiënteerde samenvatting verwijs ik naar Chapter 6: Discussion

begrip met een veranderlijke inhoud – meer gewaardeerd wordt dan femininiteit. Genderongelijkheid is dan het resultaat van de interactie van processen die mensen in een sociaal geconstrueerde hiërarchie van macht en privilege plaatsen. Duurzame verandering vereist dat deze machtsprocessen, die leiden tot een vanzelfsprekende verdeling van macht en privilege, aan de orde worden gesteld en dat organisaties de regels van het spel veranderen. Dan wordt transformationele verandering mogelijk. Genderonderzoekers stellen dat mensen die deelnemen aan interventies die dergelijke transformationele verandering tot doel hebben, kennis zouden moeten verwerven over de interactie tussen de processen die genderongelijkheid (re)produceren. De algemeen heersende, vanzelfsprekende genderkennis ziet die systematische ongelijkheid niet, beschouwt de status quo als normaal en rechtvaardig, en legt de verantwoordelijkheid voor verandering bij de mensen die door het systeem van genderongelijkheid juist benadeeld worden. In de empirische hoofdstukken van mijn onderzoek adresseer ik vraagstukken rondom de (nieuwe) genderkennis die deelnemers zouden moeten verwerven. Mijn onderzoek richt zich op een bètafaculteit in Nederland, die te kampen had met een gedurig laag percentage van vrouwelijke onderzoekers in hogere posities. In 2014 werd minder dan tien procent van de posities voor universitair hoofddocenten en hoogleraren ingenomen door een vrouw. Vijf onderzoeksinstituten van deze faculteit namen deel aan interventies gebaseerd op participatieve systeemdynamica, teneinde de ongelijke representatie van vrouwen in alle, maar vooral in senior onderzoeksposities aan te pakken. Het project werd ontworpen als participatief actieonderzoek en geïmplementeerd tussen 1 januari 2014 en 31 december 2017. Het doel was om genderbewustzijn van participanten te vergroten, een gezamenlijke analyse te maken van processen die genderongelijkheid in het betreffende onderzoeksinstituut (re) creëren, aanknopingspunten voor beleidsverandering te identificeren, en probleemeigenaarschap over te dragen.

Hoofdstuk 2 concentreert zich op de methodologie, te beginnen met de

onderzoeksbenadering van participatief actieonderzoek. Deze benadering is gericht op het oplossen van problemen door vanzelfsprekende kennis te betwisten en te ontkrachten, en zodoende nieuwe kennis te ontwikkelen. Onderzoekers en participanten werken samen in dit doel van kritische kennisproductie. Ik heb gebruik gemaakt van participatieve systeemdynamica, meer specifiek group model building, om mijn participatieve actieonderzoek te ontwerpen en uit te voeren. Group model building is ontworpen om te werken met verschillen tussen participanten, die worden beschouwd als deskundigen op het probleem dat om oplossing vraagt. In een zo democratisch mogelijk proces van kennisverwerving en onderhandelingen ondersteunt de facilitator de deelnemers bij het visualiseren van de processen die in onderlinge interactie het probleem veroorzaken en in stand houden. Ik geef details over de interventies die ik heb toegepast, de dataverzameling en de data-analyse. Ook reflecteer ik op mijn posities als facilitator en onderzoeker, die niet altijd samenvallen. Zo moet een facilitator een neutrale positie innemen, maar voerde ik de interventie uit vanuit een niet-neutrale positie als genderonderzoeker. En soms worstelde ik als facilitator met het verzet van de deelnemers, terwijl ik als onderzoeker wist dat dit verzet een goudmijn was voor mijn onderzoek.

Resultaten

Hoofdstukken 3, 4 en 5 presenteren de belangrijkste bevindingen van mijn onderzoek.

Hoofdstuk 3 introduceert het concept van systemische genderkennis als een belangrijke voorwaarde voor interventies op het gebied van gendergelijkheid die gericht zijn op transformationele veranderingen. Allereerst omschrijf ik systemische genderkennis als een endogene visie op de interactie tussen processen die genderongelijkheid (re)produceren. Dit concept omvat twee kenmerken: een endogene visie, ook wel endogeen denken genoemd, en interacterende processen. In de context van de interventie betekent endogeen denken een focus op relevante

processen in de organisatie. Het tweede kenmerk, interacterende processen, betreft processen die met elkaar verbonden zijn in *feedback loops*, waarin processen zowel oorzaak als gevolg van elkaar zijn. Daarnaast heb ik in grafische representaties de systemische genderkennis geconstrueerd van de deelnemers voorafgaand aan, en na afloop van de interventie. Dit analytische instrument maakte het mogelijk om systemische genderkennis te verkennen. Dat heb ik vervolgens ook gedaan. Uit deze gedetailleerde verkenning van de systemische genderkennis van de deelnemers bleek dat de interventie enige invloed had op beide kenmerken.

Hoofdstuk 4 focust op machtsdynamieken in onderhandelingen over genderkennis. Ik onderzocht in detail de machtsdynamieken die tot uiting kwamen in de onderhandelingen over de transparantie van de wervings- of promotieprocedures. Het is namelijk bekend dat de algemeen heersende genderkennis ontkent dat transparantie een factor in de recreatie van ongelijkheid is. Ik ontdekte dat verschillende onderhandelingspraktijken – het uitoefenen van gezag, het tonen van verzet, het gebruiken van vragen en het onderhouden van relaties – op verschillende manieren op elkaar inwerken, wat vijf onderhandelingspatronen opleverde. Deze patronen verschilden in hun resultaten met betrekking tot het genereren van nieuwe (systemische) genderkennis. Ik concludeerde dat drie voorwaarden van cruciaal belang waren voor het ontstaan van nieuwe genderkennis: emotionele betrokkenheid, een interventieontwerp dat het mogelijk maakt de onderhandelingen te heropenen, en voldoende status van deelnemers met genderexpertise.

In hoofdstuk 5 onderzocht ik hoe het middenkader dat deelneemt aan de interventies voor gendergelijkheid omgaat met verwachtingen over hun probleemeigenaarschap. Van hen wordt namelijk verwacht dat zij de verantwoordelijkheid nemen voor veranderingen op het gebied van gendergelijkheid. Tegelijk is bekend dat zij zich daartegen verzetten, om allerlei redenen. Ik zie probleemeigenaarschap als een concept dat uit twee stappen

bestaat, namelijk het erkennen van verantwoordelijkheid en het uiten van de bereidheid om te handelen. Ik ontdekte dat deelnemende managers onderhandelen over de omvang van hun probleemeigenaarschap en dat probleemeigenaarschap een complexe gelaagdheid heeft die verder gaat dan de klassieke tweedeling in interventieliteratuur tussen '*walking*' en '*talking*'. Ik concludeer dat het creëren van een semipublieke en niet-optionele ruimte voor onderhandelingen managers ondersteunt bij het formuleren van hun probleemeigenaarschap.

Conclusies

Hoofdstuk 6 biedt een algemene discussie. Ik argumenteer dat mijn onderzoek heeft aangetoond, door op detailniveau te kijken naar onderhandelingen over genderkennis, dat participatieve systeemdynamica kan bijdragen aan gendergelijkheid. Deze interventie kan namelijk invloed uitoefenen op drie belangrijke processen die transformationele verandering mogelijk maken: het genereren van, onderhandelen over en handelen op basis van genderkennis. In dit laatste hoofdstuk herneem ik de resultaten van mijn empirisch onderzoek en formuleer ik drie overkoepelende bijdragen van mijn proefschrift.

In de eerste plaats conceptualiseer ik de notie van productieve onderhandelingen in participatieve interventies op het gebied van gendergelijkheid. Ik definieer productieve onderhandelingen als de gestructureerde discussies tussen deelnemers aan een interventie die productieve weerstand expliciet uitnodigt. Ik beargumenteer dat productieve weerstand – expliciete debatten over normen en waarden – afhankelijk is van de opzet van de interventie om te komen tot transformationele veranderingen. Mijn tweede bijdrage is het identificeren van ontwerpcondities die productieve onderhandelingen mogelijk maken: het betrekken van ongelijksoortige deelnemers; het bespreken van gecontextualiseerde en concrete inhoud; en het openen, heropenen en afsluiten van onderhandelingen. Tot slot draag ik bij aan de literatuur over gendergelijkheid met inzichten over hoe participatieve gendergelijkheidsinterventies trachten democratische

doelen en machtsprocessen te verenigen. Mijn onderzoek heeft aangetoond dat de positie van de deelnemers van invloed is op de onderhandelingen en de genderkennis die uit de onderhandelingen voortvloeit. Dit kan zowel leiden tot voortzetting van de algemeen heersende kennis als tot verdediging van nieuwe systemische genderkennis en de kritische doelstellingen van de interventie. Kortom, mijn onderzoek toonde aan dat productieve onderhandelingen een centrale plaats innemen in gendergelijkheidsinterventies en dat het belangrijk is om deze onderhandelingen mogelijk te maken en te structureren. Dit sluit aan bij het begrip van transformationele verandering als het voortdurend uitdagen van vanzelfsprekende machtsprocessen en genderkennis. Het werkwoord 'uitdagen' is de sleutel in dit begrip: verandering komt alleen tot stand door het systeem steeds opnieuw uit te dagen. Het mogelijk maken en structureren van productieve onderhandelingen in gendergelijkheidsinterventies is een middel om dit voortdurende uitdagen te ondersteunen. Met deze conclusie in het achterhoofd is mijn advies voor gendergelijkheidsinterventies: blijf praten! Keep talking!

Dankwoord

Dit boek is het resultaat van mijn wetenschappelijk onderzoek als promovenda aan de Radboud Universiteit. Ik ben er op mijn 53e aan begonnen – en dat is inderdaad een teken dat een leven als wetenschapper niet altijd al in de sterren stond geschreven. Vele mensen hebben mij echter op belangrijke kruispunten in mijn leven een zetje gegeven in wetenschappelijke richting. Ik herinner mij meester Biezeno, die deze kruideniersdochter in het pre-Citotijdperk naar het gymnasium stuurde; pianolerares Jetske Jansen, die mij stimuleerde om drie jaar na de middelbare school alsnog naar de universiteit te gaan; veel te vroeg overleden afstudeerbegeleider Teun Hoekstra, die het vlammetje van academische nieuwsgierigheid aanstak; en mijn voormalige zakencompagnon Erik Paulis, die mij de ruimte gunde mezelf opnieuw uit te vinden en een tweede studie te beginnen. Met die studie wilde ik expert worden op het terrein waar ik al sinds midden jaren negentig een grote belangstelling voor had: genderongelijkheid in organisaties. Colette van Laar, Belle Derks en Naomi Ellemers gidsten mij dit wetenschapsgebied in, en Monique Oomes begeleidde mijn stage in opdracht van het bestuur van de Universiteit Leiden – een literatuuronderzoek naar sociaalpsychologische belemmeringen voor vrouwen. Dit was de basis voor het boekje 'Kwestie van kijken', dat ik schreef in opdracht van Margo van Berkel van (toen) Opportunity in Bedrijf. Zij droeg mij voor als lid van de adviescommissie van het EU-project STAGES, waarvan Inge Bleijenbergh de coördinator was. Tijdens een vergadering van die commissie hoorde ik dat een promotieplaats beschikbaar kwam in het nieuwe EU-project EGERA – en hoewel ik niet op zoek was naar een positie in de wetenschap, wist ik toen direct dat die plaats voor mij gemaakt was.

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bereid met een frisse blik de zoveelste versie van een paper te bespreken, altijd positief en constructief kritisch. Hun onwrikbare geloof in mijn capaciteiten, ook in de momenten dat ik dat zelf kwijt was, was een belangrijke motor in mijn voortgang. Inge was bovendien coördinator van het EGERA-project, en vormde met Pleun van Arensbergen en mij de kern van het EGERA-team. In onze tweewekelijkse projectbijeenkomsten, over *work packages, deliverables,* en *milestones,* rekte zij mijn visie op effectief vergaderen op door soms ter plekke actiepunten aan te pakken, schaalde zij onze ambities naar pragmatische proporties, en had zij altijd oog voor de persoon.

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Marco, Peter en Rianne, deel ik al 36 jaar lief en leed; zij zijn klankbord en toetssteen, warm bad en kritische spiegel. Een kwarteeuw later, tijdens mijn studie Sociale en Organisatiepsychologie in Leiden, was Marja mijn onmisbare maatje op intellectueel en emotioneel vlak. En zo'n vijf jaar geleden, in dienst van de Radboud Universiteit in Nijmegen, lieten mijn collega-promovendi me vanaf het begin voelen dat ik erbij hoorde. Met sommige collega-promovendi heb ik intensiever optrokken. Met hen heb ik gelachen en gehuild, gejuicht en gevloekt. Ik noem met name Joke, Marjolein, en mijn roomies Lisette en Channah. Als laatste bedank ik hier Pleun voor haar nuchtere optimisme en hartverwarmende collegialiteit. Met haar verbleef ik weken in Ankara, Barcelona en Brno om onze academische partners aldaar kennis te laten maken met group model building. Ons krappe reisbudget dicteerde Airbnb-appartementen, boodschappen bij de Lidl, en zelfbereide maaltijden. Het was een geweldige tijd.

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About the author

Monic Lansu studied at Leiden University and received a bachelor's degree in Dutch language and culture in 1985, and a master's degree in General Linguistics in 1988. After finishing her studies, Monic worked first in educational publishing, and next pursued a career as a copy writer, communication projects coordinator, entrepreneur and employer. Monic's consistent interest in gender issues directed her to university again. She received a master's degree in Social and Organizational Psychology in 2011. Monic specialized in gender inequality, writing a literature review about social psychological barriers for women as an internship for the board of Leiden University. Commissioned by Opportunity in Bedrijf, she extended this research into a booklet on diversity. She worked as a freelance social psychologist and writer, giving lectures and workshops on evaluation bias and gender inequality. She was invited to join the National Committee of EU-project STAGES, and it was here she learned about a vacancy for a PhD candidate in another EU-project: EGERA. Starting February 1, 2014, she was employed by Radboud University, Nijmegen as a PhD Candidate for EGERA. Though her dissertation research was located in the Netherlands, she also participated in participatory action research at EGERA partner universities in Spain, Tsjech Republic and Turkey. Next to these research activities, Monic facilitated several group model building interventions in commissioned research projects, and taught a variety of courses in the field of research and intervention methodology. Since February 2018, she has worked as a researcher in the department of Methodology.